Community Service Link - 2-1-1 Project
Get Help, Give Help

Findings

Technology Infrastructure Alternative Assessment

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2-1-1 TECHNOLOGY INFRASTRUCTURE ALTERNATIVE ASSESSMENT REPORT

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Executive Summary

Project Scope Overview

The scope of this document is to present preliminary findings of the infrastructure requirements to support the State 2-1-1 Initiative. Alternatives for obtaining the necessary resources for a successful project are explored.

Key Assumption: The Long Term Vision for the Arizona 2-1-1 System will include the system being used as a public access channel for Homeland Security and Emergency Management information as well as the primary channel for Health and Human Services information through the Internet and Call Centers.

Background Information and Vision

Definition of a 2-1-1 System –

2-1-1 is a three digit easy to remember telephone number that connects people with important community services and volunteer opportunities. A self-help internet based service is also used to expedite the process of getting and giving services to those in need.

Arizona Vision for 2-1-1 Services –

The Community Service Link and 2-1-1 is Arizona's comprehensive connection to caring… more effectively and efficiently finding the right health and human services at the right time. The system will also serve as a public access communication channel for Homeland Security.

Mission -

To provide access to the right health and human services at the right time for those in need.

Community Service Link 2-1-1 Project Participants

A collaborative including the Governor's Office, the Office of Homeland Security, Valley of the Sun United Way, Department of Economic Security and Community Information and Referral is developing a 2-1-1 implementation plan for the State of Arizona based on needs assessment and community input. Information and Referral Services, Inc. of Tucson is working at the community level to determine service needs and the most appropriate means for providing services in the southern region of the State.

2-1-1 Service Delivery Models Options

There are three basic Service Delivery Models (options) that have emerged as 2-1-1 is deployed across America.

1. Centralized Ownership and Administration with a Single Call Center
2. Decentralized Ownership and Administration with Multiple Call Centers
3. Centralized Ownership and Administration with decentralized ownership of Multiple Call Centers

Basic Components for Developing and Deploying a Successful 2-1-1 System for Arizona

In order to take Health and Human Services to a higher level of efficiency and effectiveness utilizing available telecommunications and computer technologies it is necessary to build the vision of the future around a proven architecture and set of standards that include the following major components.

1. A well defined set of needs and requirements to be met
2. A specific set of business processes that are to be automated and / or re-engineered
3. An Application Portfolio that matches the needs to the automated business processes
4. **Proven and Tested Technology Infrastructure**
5. A set of Human and Technical Skills that develops and maintains the application portfolio and infrastructure adapting as needs and processes require change.

The purpose of this document is to explore available alternatives for item four from the above list, the Technology Infrastructure required to deploy 2-1-1 telephony and Internet-based Service Delivery Channels.

Executive Summary

Scope of Technology Infrastructure Analysis

There are several major categories of technology infrastructure that will be a part of the new 2-1-1 System Infrastructure. The infrastructure used today for Health and Human Services Systems currently resides in both the government and private sector. The scope of each infrastructure category must be defined and evaluated. The primary purpose for review of infrastructure options is to minimize cost and to ensure that components "talk" to each other correctly in the new expanded system. Infrastructure components that will be reviewed include: N-1-1 Systems, Networks, Telecommunications, Call Centers, Portal and Web-based Technologies, Computing Platforms, Databases, Disaster Recovery – Backup, and Security Systems. A combination of these infrastructure components will be necessary to build and deploy the Arizona 2-1-1 System.

Lessons Learned from other State 2-1-1 Initiatives

States have been working on deploying 2-1-1 Systems since 1997. Progress has been slow for a variety of reasons. The complexity of organizational, business process and technology issues have made it a slow, lengthy and costly process. At this time there are 22 states that have operational systems. There is a published set of standards for successful deployment of 2-1-1 systems. State progress is tracked nationally and data is readily available for lessons learned to help shape Arizona decisions on the features of the system deployed for Arizona. To review other state initiatives visit www.211.org

Emerging Business and Technology Trends Impacting Arizona 2-1-1 Decisions

Business requirements for 2-1-1 systems are continuing to evolve and technology capabilities to meet the increasing business requirements are readily available.

- Since the formation of the Homeland Security Department at the national level, States have started looking at 2-1-1 and 3-1-1 Systems as being public access channels for emergencies and response to terrorist threats. This trend provides additional measurable benefit, but adds complexity and cost to deploying 2-1-1 systems.
- Enhanced Information Technology capabilities have enabled significant improvements in the delivery of Health and Human Services. It is possible to re-engineer business processes with much higher efficiencies and effectiveness of government. However because of the degree of change introduced into agencies and organizations for health and human services reform, it will take 10 – 12 years to deploy the technologies at a cost measured in the 100 million dollar range.
- In the past five years the Internet has been developed as a self-help channel for delivering health and human services to citizens. All major state agencies have web-based components as part of their service delivery channels. Features and services are continuing to evolve quickly.
- Some states are running into funding problems for 2-1-1 and have to slow up their deployment efforts until funds can be obtained. Most states are looking to new funding sources to enhance their systems or link them with other emergency management requirements.

Current Status of Technology Infrastructure

State Government Infrastructure As-Is Overview

- 9-1-1, 7-1-1 and 5-1-1 Systems are deployed in Arizona. All are in operational status with their own resources and funding sources. Each is continuing to evolve.
- State government Health and Human Services Technology Infrastructure resides in silos. All organizations are feeling the pinch of tight budgets and limited resources to deploy new applications and infrastructure upgrades.
- Current State Infrastructure can be leveraged in the deployment of a 2-1-1 system for Arizona. ADOA, DES, DEMA and DPS are all viable alternatives across all major infrastructure categories. DOT is also an alternative for a statewide telecommunications network. GITA and DEMA must play roles in the development of the system. DOR, DOT, AHCCCS, DHS and several other smaller agencies will all be impacted by design decisions because of the silo status of current infrastructure.

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Private Sector Information and Referral Services Infrastructure Overview

- Both the Phoenix and Tucson based Information and Referral Services organizations operate 24X7 call centers. Both organizations are working towards Alliance of Information Referral Systems certification and accreditation of their employees and companies. They are viable options for building a decentralized call center model. Investment in both organizations would be required to handle the increased loads of a 2-1-1 system. Collectively they own the provider services database for the State of Arizona and need to be a part of the collaborative process of building the future system. They would be significantly impacted if a centralized call center model is chosen.

Other Infrastructure

- The Amber Alert and National Pilot Project for "All Alert" can be explored as a parallel public access channel for emergency management and homeland security requirements. However, it does not seem a likely channel for handling day to day Health and Human Services citizen needs for self-help and call center activities.
- City and County government Infrastructure supporting local Health and Human Services needs can be explored as an option for a decentralized model depending on system design criteria. At a minimum there should be linkages to web sites and service centers. City of Phoenix and Tucson are in the feasibility analysis stages for future 3-1-1 systems.
- VSUW has expressed strong interest in being a participant in building the 2-1-1 system on new and/or expanded private sector infrastructure particularly for the Self Service Internet application.

Planned Changes to Technology Infrastructure

All participants involved with Health and Human Services delivery are continuing to enhance their existing infrastructure and applications portfolios for serving the public. This means that the planning model for 2-1-1deployment must be very broad and dynamic to minimize risk, make certain that infrastructure components communicate correctly and to not waste resources.

State Government

There are at least a dozen current or planned technology infrastructure projects that impact 2-1-1. Exhibit 4 in the exhibits section for the report contains a chart showing all known activity and the infrastructure that is impacted by these other technology projects.

Information and Referral Services Organizations

The two primary Arizona I&RS organizations are currently working together with other stakeholders to deploy two additional services and web based applications. This includes the "Milagro" joint database web access project and the HMIS Pilot project to provide additional services to the homeless. The Tucson I&RS is also currently upgrading its call center infrastructure.

Other Organizations

ALL ALERT and the Arizona Community Action Alliance both have current projects providing services to the public that should be linked to the 2-1-1 Initiative but are not the primary source for the foundation infrastructure.

Overview of Business Requirements Impacting Infrastructure

There are several categories of business requirements that influence the mix and depth of technology infrastructure for a 2-1-1 system. They include:

1. The number and nature of any E-Government or E-Commerce initiatives
2. Mandated Health Insurance Portability Accountability Act (HIPAA) needs
3. Adhering to Alliance of Information and Referral Services National Standards for 2-1-1
4. Planned Health and Human Services System Features using the Call Center and Internet
5. Emergency Management and Homeland Security System Features, Interfaces, Data Access Needs and Alerts using 2-1-1 infrastructure to communicate with citizens.

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Project Costs and Funding Sources

Project Cost

- Project cost is a function of scope, design approach and the schedule for deploying results. It is too early to accurately predict cost until more variables are clearly defined. It is possible to give ranges of costs based on the experiences of other states and organizations that have deployed systems of similar scope, size and complexity.
- GITA has a Life Cycle Cost Model that is an integral part of their Project Investment Justification (PIJ) Process. As the 2-1-1 Project approach becomes better defined it will be necessary for project sponsors to prepare and receive approval for the 2-1-1 Project PIJ

Funding Options

Current economic conditions in Arizona will make deploying the 2-1-1 initiative difficult. Traditional boundaries for private sector participation with government and the budget picture for state government make it nearly impossible to fund the 2-1-1 initiative from current sources. United Way does not have the resources to independently fund the complete cost of applications, infrastructure and human – technical skills required to deploy the complete 2-1-1 initiative. Collaboration of existing funding streams must be cultivated and explored. In addition, new sources such as emerging national grants from Homeland Security, Bio-Terrorism and National 2-1-1 programs must be evaluated and applied to build the 2-1-1 system in Arizona.

Summary of Infrastructure Alternatives

The body of the report explores the Pros and Cons of Centralized vs. Decentralized vs. Hybrid Business Models as well as the Pros and Cons of Government vs. Private Sector vs. Hybrid Infrastructure Sources. In general there are three options for the infrastructure necessary to support the overall project.

- Option 1 Build on Current Infrastructure Government and/or Private Sector 501C3 Corporation Infrastructure
- Option 2 Develop All New Infrastructures
- Option 3 Utilize Hybrid Infrastructure - A Combination of Current and New Infrastructure

It is recognized that there are other political, organizational, governance, funding and business issues that enter into the decision process for choosing a 2-1-1 service delivery model in Arizona. The best alternative depends on the selection of the 2-1-1 Service Delivery Model and the Scope of the Project.

- If a Centralized Model is chosen, the alternatives would be 1) with in government, DES, DOA,and/or DPS, 2) current I&RS companies or 3) a new Private Sector 501C3 Organization.
- If either a Decentralized Model or Hybrid Model is selected then, DES, DEMA, DOA, DPS, AHCCCS, GITA, DEMA, CIR, I&RS and other new or existing organizations may play a role.
- It should be noted that both AHCCCS and DHS utilize ADOA infrastructure to deploy significant portions of their services. They along with ADOA are significantly impacted by the outsourcing of the Arizona Telecommunication System to a private sector entity yet to be named.
- Other infrastructure alternatives utilizing specialized applications such as ALL ALLERT or County Local Government Initiatives are not viewed as reasonable when the composite requirements of 2-1-1 and Homeland Security are included on a statewide basis. However they must be included within the linkages of the deployed system, but not used as the foundation infrastructure.
- All options and alternatives require investment in infrastructure.
- Building the 2-1-1 System on new Private Sector (501C3) Infrastructure is a viable alternative for a centralized traditional 2-1-1 Model. It becomes a much higher risk project with significant investment in infrastructure and skills when homeland security and emergency management are included as a requirement. Also to handle case management and automated referrals within the Arizona Vision would be a major investment. It may have the advantage of being able to more easily deploy current best practices for customer relationship management systems with interfaces for push – pull data technology to draw data from existing silos of government information systems. Security will be a major issue with government agencies for this alternative.

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Executive Summary

Project Critical Success Factors and Best Practices

1. Provide Strong Leadership and High Level Executive Sponsorship
2. Develop and manage a specific Arizona 2-1-1 Governance Model
3. Establish and Maintain Effective Collaboration and Cooperation of Stakeholders
4. Acquire Adequate Funding and Resources to execute the project and achieve the vision
5. Use Commercial-Off -The-Shelf Technology Products for Hardware / Software where possible
6. Utilize Professional, High Quality Project Management with formal reporting and accountability
7. Manage System Capabilities and Public/Stakeholder Expectations
8. Develop and Adhere to a Formal Project Business Plan
9. Execute the Overall Project in Phases with well defined deliverables for each phase
10. Integrate existing technology infrastructure

Conclusions and Suggestions

Conclusions

1. Existing government and private sector infrastructure can be used as a foundation in building the State's 2-1-1 System
2. Government, Private Non-Profit and Profit Organizations are in the HHS business today
3. HHS delivery today is accomplished through loosely coupled silos of technology found in both the public and private sector
4. Existing HHS organizations are continuing to develop their systems and delivery channels
5. New HHS requirements are evolving as the result of terrorist acts. threats and the creation of Homeland Security Infrastructure and Systems
6. 2-1-1 Systems are complex, take a great deal of collaboration along with time, money and dedicated resources to develop, deploy and maintain
7. Existing funding streams and resource pools are not adequate to support the major 2-1-1 initiative in Arizona
8. Quality Technology Solutions to support 2-1-1 requirements are readily available, however careful planning is required to deploy the technologies.
9. The 2-1-1 Service Delivery System(s) must possess the attributes of being seamless, fast, efficient, reliable, accurate, secure and easy to use
10. 2-1-1 Projects are expensive to develop and deploy and are high risk

Suggestions

1. Follow ALL of the Project Critical Success Factors to control cost and mitigate risks
2. Utilize a Hybrid Infrastructure Model. This minimizes both development and operating costs while optimizing service through the delivery channels. The balance between government and private infrastructure components should be determined by the stakeholders identified in the Governance Model and the management team hired to execute the project. The centralized database and associated infrastructure should be controlled by the State and the local governments and/or private sector participants could own and operate call centers using a common set of standards administered through the governance model.
3. Develop a formal 2-1-1 Business Plan to serve as a baseline document for stakeholders with clearly defined roles and responsibilities.
4. Assign resources to work with the Corporation Commission and the Local Exchange Carriers to make certain there are no issues and problems with assigning responsibility for a 2-1-1 number and in deploying the telephony system statewide.

Introduction

Definition of 2-1-1 Systems

Traditionally 2-1-1 is the national abbreviated dialing code for free access to health and human services information and referral. 2-1-1 is an easy-to-remember and universally recognized number that makes a critical connection among individuals and families in need and appropriate community-based organizations and government agencies. 2-1-1 helps people in need to navigate the complex and ever-growing maze of human service agencies and programs. By making services easier to access, 2-1-1 encourages and fosters self-sufficiency.

Arizona Vision and Mission for its 2-1-1 System

The Arizona 2-1-1 Initiative is fully supported by the Governor and was clearly declared in her first State-of the State Address in January 2003. The vision and mission for the initiative are as follows:

Arizona Vision for 2-1-1 Services –

The Community Service Link and 2-1-1 is Arizona's comprehensive connection to caring… more effectively and efficiently finding the right health and human services at the right time. Homeland Security requirements are being added to this vision.

Mission -

To provide access to accurate and timely health and human services at the right time for those in need.

Arizona Community Service Link 2-1-1 Project Overview and Scope

The Arizona 2-1-1 Initiative has multiple goals to accomplish. They include:

- Reduce costs of services through utilization of proven technology and best practices.
- Expedite easy, efficient and timely access to health and human services to children, families, seniors, people with disabilities and individuals fighting disease.
- Increase community involvement, investment and service access to selected clusters by enhancing the connection between the community and the many human services delivery systems.
- Provide crisis preparedness information along with terrorism threat response capabilities
- Improve the quality of health and human services through integrated case management
- Provide means to efficiently educate government agencies and other service providers about community needs and services that may be available

2-1-1 Service Delivery Models

Options for service delivery models include 1) Centralized, 2) Decentralized, 3) Hybrid.
For Arizona some variation of a Hybrid model will best serve the consortium of stakeholders.

Status of 2-1-1 Delivery Systems Across America

The National Web-site for 2-1-1 (www.211.org) provide linkage to a report developed through the University of Texas that is annually updated giving the status of all state 2-1-1 projects. To date 22 different states have deployed 2-1-1 systems in at least part of their state. Another 12 states will deploy during the coming year. The national report was carefully analyzed for information beneficial to Arizona with its initiative. A summary of that analysis is provided in the exhibits for this report.

Overview of Technology System Development Model Components

This overview shows the relationship of infrastructure to the other layers and components of the complete system so that the reader understands the importance of quality infrastructure. Exhibit 1, in the exhibits section of the report contains the 2-1-1 model that is recommended for Arizona. The complete system layers are:

Business Processes and Citizen Contact Requirements
Application Layer
Infrastructure Layer
Human and Technical Skills for support of Business Processes, Applications and Infrastructure

This report only reviews technology infrastructure requirements necessary to support a 2-1-1 System

Infrastructure Analysis

Infrastructure Components Overview

N-1-1 Systems

Arizona has successfully deployed Three-Digit-Dialing for 9-1-1 Emergency Services, 7-1-1 Arizona Relay Service for the Deaf and Hearing Impaired, 5-1-1 Arizona's Transportation Information Services Number, and 4-1-1 for Telephone Directory Assistance. 2-1-1 is the next scheduled service planned for deployment.

In July of 2000 the FCC designated 2-1-1 for use by all 50 States for Health and Human Services. To date, 22 states have successfully deployed systems in at least parts of their states. More than 65 million Americans have access to 2-1-1 services today. An additional 12 states are in the process of negotiating systems with their Public Utility Commissions and their Telephone Local Exchange Carriers. Many of these will come on line during 2004.

Status of N-1-1 Systems in Arizona

N-1-1 Service	Description	Owner	Operator	Status
9-1-1	Emergency Services	ADOA	PSAPs	Operational
7-1-1	Hearing Impaired Relay Service	ACDHH	MCI	Operational
5-1-1	Transportation - Highway Service	ADOT	ADOT	Operational
4-1-1	Directory Services	Private Sector LEC	Private Sector LEC	Operational
3-1-1	Non Emergency Government	Phx. - Tucson	TBD	Early Planning
2-1-1	Health and Humans Services	TBD	TBD	Planned

Statewide Networks

Deployment of a statewide 2-1-1 System using call center(s) and the Internet requires a statewide backbone network to transport the information and process referral requests. It must also be scalable to handle increased demand and traffic during emergencies. Neither of the current private sector I&RS organizations have sufficient reach and bandwidth capabilities to handle the planned load. There are four possible statewide government networks that could serve as a foundation backbone for building the 2-1-1 system. They are currently owned and operated by

1) Department of Administration,
2) Department of Economic Security,
3) Department of Transportation and
4) Department of Pubic Safety.

Each would require some investment to make their network scalable and available for 2-1-1 use. All agencies have statewide contracts with private sector telecommunications service providers to be utilized in the process of expanding the capacity of their networks. The option of building a new statewide network through private sector resources is also an alternative, but would be more expensive to build.

Telecommunications Infrastructure

Telephony Systems – Call Center Telephony with ACD, IVR and infrastructure for the computer telephone interface (CTI) are required.

Data Networks – A statewide backbone data network may be required to transport information and requests among citizens, operators and other critical stakeholders. The statewide network requirements become significantly greater when homeland security needs are added to the health and human services needs. The network must also certainly be scalable during emergencies when data volumes and usage will be much greater. The final determination of a virtual private network versus the use of existing public telecommunications infrastructure would be a function of need and final system design.

Local Exchange Carriers

Qwest and Citizens Communications (Frontier) are is the primary Local Exchange Carriers in Arizona and are required to delivery 2-1-1 services within their respective service areas. However, there are 14 additional Telephone Local Exchange Carriers that are mentioned in the Arizona Corporation Commission hearings on 2-1-1 service delivery for Arizona. This means that in order to have complete statewide coverage all 16 carriers must have the capability to translate the 2-1-1 number dialed from any point in their service territory through their central office switches into a 10 digit number which routes the caller to the closest available 2-1-1 call center.

Infrastructure Analysis

Local Exchange Carriers - continued

The owner of the 2-1-1 number for Arizona must supply the mapping detail for each local exchange carrier to make the system a reality. This has been a major obstacle in other states. Additional work must be done to make certain this is not a problem for Arizona. The following chart identifies the Local Exchange Carriers and their locations of service for Arizona.

Arizona 2-1-1 Telephony Local Exchange Carriers

Company	Service Location	Parent Company	Comments
Qwest	Statewide	Qwest	
Cox	Metro Areas Complete territory unknown	Cox	
Accipiter Communications	700 square mile area in Northern Maricopa County and Southern Yavapai County. The primary community today is Castle Hot Springs		Glendale based company
Century	Four Corners in North East Arizona.		Pagosa Springs, Co
Copper Valley Telephone	South East Arizona Primarily in Cochise County		Wilcox
Fort Mohave Telephone	Mohave Valley		
Frontier	Northern Arizona Counties	Citizen	Kingman
Gila River Teleco	Gila Reservation Central Arizona		Chandler
Midvale Telephone Exchange	Benson, St. David	Idaho Carrier	Internet and LD only
Navajo Communications	Parts of Apache and Navajo Counties	Citizen	Window Rock
Saddleback Communications	Salt River and Pima Indian Reservations		Scottsdale
San Carlos Apache Telecom	San Carlos Reservation		San Carlos
Tabletop Telephone	South West Arizona		Ajo
TDS	Quartsite and Winterhaven in Yuma County		
Tohono O'dhan Utility Authority	Reservation- South West Arizona		Sells
Valley Telephone Co-Op	South East Arizona		Wilcox

Note: Other Communication Companies such as MCI, ATT, Sprint, Verizon, etc. become involved when wireless telephony is required for 2-1-1 calling. Wireless 2-1-1 dialing requirements must be worked out through the Arizona Corporation Commission for these wireless operating companies.

Infrastructure Components Overview - continued

Web-based Services using the Internet as a Delivery Channel

The Government Information Technology Agency (GITA) has provided leadership and standards for state government delivery of services in Arizona. They have worked cooperatively with most State Agencies and the private sector to develop the "Arizona at Your Service" portal. They have received national recognition for their portal. In addition to the State Portal each of the government agencies reviewed has a strong web presence for communicating information and services to the public. The private sector I&RS organizations also use the web to communicate with the public and the health and human services providers in the communities. The world-wide- web is already well established as a service delivery channel for human services.

Call Centers

Phoenix based Community Information Referral Services and Tucson Information and Referral Services both have operated successful 24x7 Health and Human Services Call Centers with an annual volume of calls that exceeds 300,000. Within State Government, ADOA provides Call Center Services for major Health and Human Services Agencies using both ACD and IVR technologies. Their government customers have processed more than 8,000,000 calls through their infrastructure in the past 12 months. The majority of these calls have been health and human services related. It is expected that deployment of 2-1-1 will increase HHS related calls by up to 40 percent. Both public and private sector call centers will need some upgrades to their capabilities to handle the increased call volumes.

12 Month Call Center Volumes Table

Organization	Comments	24X7 Ops	IVR Calls	ACD Calls	PBX Calls	Total Calls
Government						
DES	Multiple call centers each with specialized services	Yes	5,449,967	1,283,514		6,733,481
DOR	Related to tax services	Yes	832,850	595,482		1,428,332
DHS	New application	No		140,496		140,496
ADOA – other	Not health and human services related	No		226,658		226,658
ACDHH	Provider uses back up location In California at night	Yes		14,000		14,000
Private Sector Non-Profit						
Phx – CIRS		Yes		304,000		304,000
Tuc.. – I&RS	Upgrading phone system for ACD	Yes			90,000	90,000
Totals			6,282,817	2,564,150	90,000	8,936,967

It can be seen from this chart that a great deal of service is being rendered to the public through the decentralized call center activity that is in existence today. The combined centers have processes nearly nine million calls in the past year.

Infrastructure Components Overview - continued

Computing Platforms including Storage Requirements

The 2-1-1 Application Portfolio can be built on any one of three different computing platforms. They are:

1. Windows
2. Unix (including Linux)
3. Mainframe and/or Mid-Range Data Centers

All three computing platforms are found within government agency technology infrastructure. Both private sector I&R organizations utilize Windows platforms, have limited use of Unix platforms. Valley of the Sun United Way has a mid-range AS400 platform. It appears that the most cost effective platform for development of 2-1-1 would be Windows based architecture. However it would be necessary to push and pull data from back end applications that utilize the other platform architectures. This is particularly true for emerging Homeland Security information requirements as shown within their architecture models. It is expected that Storage Area Network or Network Attached Storage RAID technologies would be used to store and retrieve the data requirements for 2-1-1 deployment.

Databases

The HHS Provider Services Data Bases size and complexity makes SQL Server a likely target architecture. However, the size and complexity of the CRM oriented customer contact database may mean that Oracle or DB2 be considered as well as SQL Server to handle the volumes of data and the complexity of some of the queries against the data base. Within state government all three options are currently deployed to support HHS applications. Microsoft ACCESS and SQL Server are also commonly used by the two private sector I&RS organizations.

The extent of database requirements and the query languages and tools necessary for homeland security interfaces is unknown at this time. Examination of industry architecture models for emerging homeland security needs suggest the possibility of data warehousing tools. These software tools are very infrastructure resource intensive and certainly impact overall project planning in matching system capabilities to available funds to build and operate the system. Hosting the data close to these requirements should be carefully considered.

Security

GITA has established standards for securing data and information systems. These standards would be used by agencies supporting 2-1-1 applications and data bases. They include infrastructure for firewalls and equipment for logging and monitoring activity and authenticating users of system features and accessing non-public data. The complexity of the overall 2-1-1 system requires a strategy for layered defense of the data, network and computing infrastructure. I&R organizations have deployed firewalls to protect their data and infrastructure. In all cases security must be strengthened to deploy a properly protected 2-1-1 system.

Overview of the Applications Portfolio Layer for the System

State Government Health and Human Services including DES, AHCCCS and DHS have a large portfolio of existing applications that run the day to day business of the agencies. Exhibit 8 lists the number of mission critical applications. The infrastructure used to run these systems is essential to the 2-1-1 project because much of the data needed for future automated referral and case management applications must interface with the legacy systems. Enterprise Application Integration middleware may be a technology infrastructure component that van deliver the needed business requirements without having to rewrite all the back end legacy systems currently used to support health and human services business functions in the several agencies and organizations. However, deployment of Enterprise Applications Integration Software is expensive to acquire and maintain. Current stakeholders are not experienced with this type of software. It may be necessary to acquire the services of an experienced system integration company and / or contract with the selected supplier of the software product to enhance and maintain the product on behalf of the 2-1-1 Team. This option will add to both development and operational costs.

2-1-1 TECHNOLOGY INFRASTRUCTURE ALTERNATIVE ASSESSMENT REPORT

Infrastructure Analysis

Major Software Components

Software acquisition, licensing fees and maintenance is a major cost factor in information systems today. Highly specialized skills are required to develop and maintain code. One of the most critical decisions of information systems projects centers around make versus buy decisions for software and determining which products will best meet a given set of requirements. The following table provides a partial list of the software components that must be acquired, integrated and maintained for this project.

Software Component	Purpose - Need
Network Operating System	Manages the project Wide and Local Area Networks
Desktop Operating Systems	Manages all of the individual workstations
Call Center Management Multiple components	Manages the interface between the telephony system and the call center operators work stations
Security Products	Firewall software – monitor and manage access to system telecommunication, computing and data resources
Desktop Support – Office Suite	Worker productivity
Database Systems	Manages the systems data access and structure of the databases
Data Warehouse Tools	Manages complex queries against the system databases
Technical Support Tool Set	Software to assist technicians in managing and monitoring computers and peripherals
Network Management	Monitors and manages network activity to identify and help eliminate bottlenecks in information flow
Enterprise Application Integration	Middle-ware software products to bridge between software products that normally do not talk and share data very well. There are companies that specialize in the development and support for this software.
HHS Applications	Back end agency application portfolio that automates business function. The State of Arizona agencies and the private sector I&RS organizations have significant investment in computer applications that support current business processes.
Web Development - support tools	Specialized software tools for the creation and maintenance of web pages
Business Process Re-engineering	Software tools used to model business processes and assist with redesign of organization business processes
Project Management Tool Set	Software tools used to manage project schedules, manage tasks, track project open issues and problem logs, etc

Current As-Is Arizona Health and Human Services Infrastructure

Government Overview - **Department of Economic Security**

Technology Domain	Organization Capability	Comments
Computing Platforms		
Windows Class Servers	Yes – multiple	Over 6 Tera-bytes of data stored
Unix Platform	No	
Main-frame Data Center	Yes – IBM Z900	2nd Largest DC in State Gov't.
Telecommunications		
Statewide Network	Yes	Serves all DES operations in state
Call Center Services	No	Uses ADOA services
Operational Call Center(s)	Yes – Multiple	Operate 24X7
Local Area Network(s)	Yes – Multiple	Each office state has a LAN
Telephony Systems	Yes	Mixed with ADOA telephony
Statewide Vendor Contracts	Yes	
Web Services		
Internet Service Provider	ATT and QWest	
Operational Portal - Statewide	Web – sites(s)	Extensive use of web
HHS Web-Site	Yes	Most comprehensive in state
Public – Private Partnerships	Yes – Multiple	
Health and Human Services Application Portfolio	See exhibits	
N-1-1 Services	No	
HHS Mission Critical Applications	Yes	See exhibits
HIPAA Requirements	Yes	Major participant
Collaborative Technology Project	Yes	Previous use of leading consultants
E-Government Initiatives	Yes	Current large PIJ under GITA review
Statewide Databases	Yes	
Types	ADABAS, DB2, SQL Server	Multiple DB engines
Security – Emergency Response		
Statewide Information Protection Center	Participant	
Disaster – Back Up	No	Files backed up, no DR plan
Uninterrupted Power Sources	Yes	Data center has generator and UPS
Homeland Security Req't	TBD	
IT Architecture and Standards	Uses state standards	Has developed additional stds.
Technology staffing resources	Internal plus contractors	Largest technology staff in state gov
Linkage to other stakeholders	Yes	Both government and private sector

DES infrastructure resources for Health and Human Services is the largest in the State. They are also a hub and focal point for human services at the State level and administer over 50 programs and services. They are a key alternative for consideration in building the 2-1-1 System on existing infrastructure.

Current As-Is Arizona Health and Human Services Infrastructure

Government Overview - **Department of Administration**

Technology Domain	Organization Capability	Comments
Computing Platforms		
Windows Class Servers	Yes	Does limited hosting for other agencies
Unix Platform	Yes - AIX IBM RS6000	Statewide HRIS application, partnership with IBM
Main-frame Data Center	Yes – Fee for Service IBM Z900 with Network attached storage	Provides DC services for other agencies including, AHCCCS, DOT and DOR
Telecommunications		
Statewide Network	Yes ATS	Provides services for numerous other agencies including HHS
Call Center Services	Yes	Provides services for other agencies
Operational Call Center(s)	Yes	
Local Area Network(s)	Yes – Multiple	
Telephony Systems	Yes Owns 542 and 364 prefixes	Third largest provider in the state with over 12000 subscribers
Statewide Vendor Contracts	Yes	Multiple statewide contracts
Web Services		
Internet Service Provider	Yes – Global Crossing	Helps provide Internet service for other agencies
Operational Portal - Statewide	Web – site	
HHS Web-Site	Yes - state HIPAA site	
Public – Private Partnerships	Yes	
Health and Human Services Application Portfolio	Yes – oriented towards customers inside state gov"t	
N-1-1 Services	9-1-1	State administrator for 9-1-1
HHS Mission Critical Applications	HRIS for employees	Run other agencies HHS applications through data center
HIPAA Requirements	Yes	The state leader for HIPAA Angela Fisher is coordinator
Collaborative Technology Project	Yes	HRIS with IBM and others
E-Government Initiatives	Yes	Security – Operation Enclave
Statewide Databases		
Types	Yes – multiple platforms	
Security – Emergency Response	Yes	Works closely with Homeland Sec.
Statewide Information Protection Center	Yes	One of the State leaders with SIPC and FBI safe-guard program
Disaster – Back Up	Yes	Collaborative program with DES and DPS to interconnect and backup data centers
Uninterrupted Power Sources	Yes	With generator backup
Homeland Security Req't	Yes	Involved in state security program
IT Architecture and Standards	Yes	Follows GITA standards
Technology staffing resources	Internal staff with contractors	Employees require background chk
Linkage to other stakeholders	Yes	Often uses formal SLA

ADOA is currently the state agency authorized by statute to provide telecommunications and computing infrastructure for other agencies. This is managed through a special fund and cost recovery system. It is a viable alternative for 2-1-1 foundation infrastructure. However there is risk in this choice because the legislature is currently looking at changing how ADOA conducts its business and interfaces with the private sector.

2-1-1 TECHNOLOGY INFRASTRUCTURE ALTERNATIVE ASSESSMENT REPORT

Current As-Is Arizona Health and Human Services Infrastructure

Government Overview - **Department of Public Safety**

Technology Domain	Organization Capability	Comments
Computing Platforms		
Windows Class Servers	Yes	
Unix Platform	Yes IBM RS6000	Used for Federal Criminal Justice Requirements
Main-frame Data Center	Yes IBM Z800	
Telecommunications		
Statewide Network	Yes	Both Land based lines and Statewide Analog Microwave
Call Center Services	Yes	Limited to law enforcement
Operational Call Center(s)	Yes Multiple	Specialized for Law Enforcement Linked with DOT Traffic Control Center
Local Area Network(s)	Yes – Multiple	
Telephony Systems	Yes	
Statewide Vendor Contracts	Yes	
Web Services		
Internet Service Provider	Uses third Party	
Operational Portal - Statewide	Web-site	
HHS Web-Site	Yes	Sex offender database on-line
Public – Private Partnerships	Yes	
Health and Human Services Application Portfolio	Limited	
N-1-1 Services	9-1-1	Public Access Point Backup for Coconino County
HHS Mission Critical Applications	Yes	Limited
HIPAA Requirements	Limited	
Collaborative Technology Project	Yes	Several related to Criminal Justice
E-Government Initiatives	Yes	Very limited by current funding levels
Statewide Databases	Yes	Law enforcement related
Types	DB2, ADABAS Windows	
Security – Emergency Response	Yes	First Line for emergencies
Statewide Information Protection Center	Yes – major partner	Performs forensics work
Disaster – Back Up	Yes	Partner with ADOA and DES
Uninterrupted Power Sources	Yes	With generator
Homeland Security Req't	Yes	Linkage with law enforcement
IT Architecture and Standards	Yes	Follows GITA standards
Technology staffing resources	Internal	Requires special security clearances
Linkage to other stakeholders	Yes	Links with ADOT and other for AMBER Alert program

The Department of Public Safety currently plays a minimum role with Health and Human Services Delivery, but is a critical agency for future Criminal Justice and Homeland Security Applications and Interfaces. It possesses infrastructure that will be used as these systems evolve.

Current As-Is Arizona Health and Human Services Infrastructure

Government Overview **- Department of Transportation**

Technology Domain	Organization Capability	Comments
Computing Platforms		
Windows Class Servers	Yes Large server farm	DOT has many offices located through out the State. Each has a local area network with servers.
Unix Platform	Yes Oriented towards highway applications	One of the primary state locations for GIS data
Main-frame Data Center	Uses ADOA	
Telecommunications		
Statewide Network	Yes	Both MVD and Highway offices Owns right of way along freeways for others fiber networks
Call Center Services		
Operational Call Center(s)	Yes	Operate State Traffic Operations Center
Local Area Network(s)	Yes	Largest number in state gov't
Telephony Systems	Yes Have own PBX switch	
Statewide Vendor Contracts	Yes	
Web Services		
Internet Service Provider	Uses 3rd party	
Operational Portal - Statewide	Yes – partner with GITA	Key player in Service Arizona National awards for MVD application
HHS Web-Site	Yes	Limited to transportation related subjects
Public – Private Partnerships	Yes	Also gov't to gov't
Health and Human Services Application Portfolio	No	
N-1-1 Services	5-1-1	Owner and operator
HHS Mission Critical Applications	No	For future a key provider of GIS type data on highways
HIPAA Requirements	No	
Collaborative Technology Project	Yes	
E-Government Initiatives	Yes	
Statewide Databases		
Types	Yes – multiple	
Security – Emergency Response		
Statewide Information Protection Center	Yes	
Disaster – Back Up	Yes	
Uninterrupted Power Sources	Yes	
Homeland Security Req't	Yes	For Highway Information – linked with emergency management
IT Architecture and Standards	Yes	Follows GITA standards
Technology staffing resources	Internal & Consultants	
Linkage to other stakeholders	Yes	Links with DPS and others for AMBER Alert program

The Department of Transportation has a major statewide telecommunication network to support both its motor vehicle system and highway system locations. The agency also hosts the state 5-1-1 system. It is an alternative for use by the 2-1-1 system particularly if a decentralized model is selected for service delivery. However, investment will be required if this infrastructure is selected.

Current As-Is Arizona Health and Human Services Infrastructure

Government Overview - **Department of Revenue**

Technology Domain	Organization Capability	Comments
Computing Platforms		
Windows Class Servers	Yes	Recent technology refresh
Unix Platform	Yes	BRITS
Main-frame Data Center	No	Use DOA Data Center
Telecommunications		
Statewide Network	Yes	Link major offices together
Call Center Services	Use ADOA	
Operational Call Center(s)	Yes	
Local Area Network(s)	Yes – Multiple	
Telephony Systems	Yes	Recent upgrade to VOIP
Statewide Vendor Contracts	Yes	
Web Services		
Internet Service Provider	Use 3rd Party	
Operational Portal - Statewide	Active web site	
Health HumanService Web-Site	Yes	Strong – related to tax services
Public – Private Partnerships	Yes	Pioneer with Accenture for the BRITS project
Health and Human Services Application Portfolio		
N-1-1 Services	No	
HHS Mission Critical Applications	Yes	Tax and Revenue related
HIPAA Requirements	No	
Collaborative Technology Project	Yes	Major tax project with Accenture called BRITS, involves revenue sharing
E-Government Initiatives	Yes	BRITS
Statewide Databases	Yes	
Types	DB2, ADABAS Windows	
Security – Emergency Response		
Statewide Information Protection Center	Yes	
Disaster – Back Up	Yes	depends on ADOA for system hosted by ADOA
Uninterrupted Power Sources	Yes	Limited to battery backup for power failure
Homeland Security Req't	None defined	
IT Architecture and Standards	Yes	Follow GITA standards
Technology staffing resources	Internal With consultants	Requires special screening to be an employee
Linkage to other stakeholders	Yes	IRS and other tax and government entities

The Department of Revenue has a unique public – private partnership with Accenture for building and operating the BRITS system. 2-1-1 project decision makers should review this partnership and document lessons learned from this complex project for factors that could apply to the 2-1-1 Initiative. Accenture also has experience as a company in deploying 3-1-1 systems at a national level including the successful deployment of 3-1-1 for the City of New York. However, from an infrastructure perspective DOR is not a major option for building 2-1-1 infrastructure.

Current As-Is Arizona Health and Human Services Infrastructure

Government Overview -**Government Information Technology Agency**

Technology Domain	Organization Capability	Comments
Computing Platforms		
Windows Class Servers	Yes	
Unix Platform	Yes	Hosted by IBM for State Portal
Main-frame Data Center	No	
Telecommunications		
Statewide Network	No	Sponsor of Telecommunications Open Partnership for AZ (TOPAZ)
Call Center Services	No	
Operational Call Center(s)	No	
Local Area Network(s)	Yes	
Telephony Systems	No	
Statewide Vendor Contracts	Yes	Several contracts for use by all agencies
Web Services		
Internet Service Provider	Use 3rd party	
Operational Portal - Statewide	Yes	Operates the State Web Service in partnership with IBM
HHS Web-Site	No	Hosts for others
Public – Private Partnerships	Yes	
Health and Human Services Application Portfolio	No	Hosts for other agencies
N-1-1 Services	No	
HHS Mission Critical Applications	None	
HIPAA Requirements	No	
Collaborative Technology Project	Yes	Has oversight responsibility for all state gov't. technology projects
E-Government Initiatives	Yes	
Statewide Databases	Yes	Relates to statewide IT planning and management of technology assets for state gov't,
Types	Windows ACCESS and SQL	
Security – Emergency Response		
Statewide Information Protection Center	Yes	Partner
Disaster – Back Up	Yes	Responsible for planning and coordinating IT disaster recovery
Uninterrupted Power Sources	No	
Homeland Security Req't	TBD	
IT Architecture and Standards	Yes	Owner of state gov't. IT standards and policies
Technology staffing resources	Internal	
Linkage to other stakeholders	Yes	

GITA should play a role in the development and deployment of the Arizona 2-1-1 System. It will certainly have oversight responsibilities for the government parts of the project, along the updates to the State's Enterprise Technology Architecture Model and the IT standards necessary to establish AIRS as a state standard for health and human services applications data exchange. It also has public – private partnership experience with statewide web portal deployment should be studied further.

2-1-1 TECHNOLOGY INFRASTRUCTURE ALTERNATIVE ASSESSMENT REPORT
Current As-Is Arizona Health and Human Services Infrastructure

Government Overview - **Arizona Health Care Cost Containment System**

Technology Domain	Organization Capability	Comments
Computing Platforms		
Windows Class Servers	Yes – maintain server farm	
Unix Platform	Yes	
Main-frame Data Center	No use ADOA	
Telecommunications		
Statewide Network	Yes	
Call Center Services	No	
Operational Call Center(s)	Yes	Expansion planned
Local Area Network(s)	Yes – Multiple	
Telephony Systems	Yes	Upgrade planned for VOIP
Statewide Vendor Contracts	Yes	
Web Services		
Internet Service Provider	Use 3rd party	
Operational Portal - Statewide	Active web-site	
HHS Web-Site	Yes	
Public – Private Partnerships	Yes	
Health and Human Services Application Portfolio	Yes	See exhibits , GITA and AHCCCS documents for detail
N-1-1 Services	No	
HHS Mission Critical Applications	Yes	
HIPAA Requirements	Yes	Required major upgrades to Application portfolio and supporting infrastructure
Collaborative Technology Project	Yes	
E-Government Initiatives	Yes	
Statewide Databases	Yes	Serve both government and private sector organizations
Types	Oracle, Windows based CA DB/DC Datacom	
Security – Emergency Response		
Statewide Information Protection Center	Yes	
Disaster – Back Up	Yes	
Uninterrupted Power Sources	Yes	Multiple UPS units , considering adding a generator
Homeland Security Req't	TBD	
IT Architecture and Standards	Yes	Follows GITA Standards
Technology staffing resources	Internal	
Linkage to other stakeholders	Yes	

AHCCCS has a large Health Services application portfolio to support its business process and client base as the State's indigent health care provider. It has significant technology infrastructure to meet its needs. It also uses ADOA telecommunications and computing infrastructure to support its operations. It has been a leader in the Arizona HIPAA initiative. It has several active technology infrastructure projects that have impact on 2-1-1 decisions.

Current As-Is Arizona Health and Human Services Infrastructure

Government Overview - **Arizona Commission for the Deaf and the Hard of Hearing**

Technology Domain	Organization Capability	Comments
Computing Platforms		
Windows Class Servers	Yes	
Unix Platform	No	
Main-frame Data Center	No	
Telecommunications		
Statewide Network	Use 3rd party	Linkage through MCI networks
Call Center Services	No	
Operational Call Center(s)	Yes	Specialized for Deaf and HH
Local Area Network(s)	Yes	
Telephony Systems	Limited	
Statewide Vendor Contracts	Yes	
Web Services		
Internet Service Provider	Use 3rd party	
Operational Portal - Statewide	Web-site	
HHS Web-Site	Yes	Primary web contact for deaf and hard of hearing information
Public – Private Partnerships	Yes	
Health and Human Services Application Portfolio	Yes	
N-1-1 Services	7-1-1	Manage the state contract for Hearing and Speech Impaired linkage using MCI
HHS Mission Critical Applications	Yes	Related to deaf and hearing impaired along with the speech impaired
HIPAA Requirements	No	
Collaborative Technology Projects	Yes	
E-Government Initiatives	Yes	
Statewide Databases	No	
Types	Windows related	
Security – Emergency Response	Yes	Has requirements for deaf and hearing impaired that must be met
Statewide Information Protection Center	No	Reporting only as required
Disaster – Back Up	3rd party	
Uninterrupted Power Sources	No	
Homeland Security Req't	TBD	
IT Architecture and Standards	Yes	Planning with GITA
Technology staffing resources	Limited internal	
Linkage to other stakeholders	Yes	

ACDHH has unique requirements for working with the deaf and hard of hearing, along with the speech impaired. This total population in Arizona numbers 450,000. Traditional call centers with Interactive Voice Response Technology do not work for the deaf and hearing impaired. Special equipment and features are required to meet citizen needs. That is the primary purpose for 7-1-1 services. It should also be noted that hearing impaired calls to a call center make much longer to satisfy the need of the caller. The average length of a call is 20 minutes. This is compared to an average of 3 minutes for a person that is not hearing impaired. ACDHH should be a participant in the planning and development of the 2-1-1 system for Arizona to ensure that special needs are met.

Current As-Is Arizona Health and Human Services Infrastructure

Government Overview - **Department of Health**

Technology Domain	Organization Capability	Comments
Computing Platforms		
Windows Class Servers	Yes	
Unix Platform	Yes	
Main-frame Data Center	No	
Telecommunications		
Statewide Network	Yes	Uses ADOA for network services
Call Center Services	No	
Operational Call Center(s)	Yes	
Local Area Network(s)	Yes – Multiple	
Telephony Systems	Yes	
Statewide Vendor Contracts	Yes	
Web Services		
Internet Service Provider	3rd Party	
Operational Portal - Statewide	Multiple web sites	
HHS Web-Site	Yes	Health related, also bio-terrorism
Public – Private Partnerships	Yes	
Health and Human Services Application Portfolio	Yes	Key area is vital statistics and public health information
N-1-1 Services	No	
HHS Mission Critical Applications	Yes	
HIPAA Requirements	Yes	
Collaborative Technology Prjts.	Yes	
E-Government Initiatives	Yes	
Statewide Databases	Yes	
Types	Oracle Windows based	
Security – Emergency Response	Yes	
Statewide Information Protection Center	Participant	
Disaster – Back Up	Yes	Primarily internal, scalable
Uninterrupted Power Sources	Yes	Four hour back up for their data center
Homeland Security Req't	Yes – Bio-terrorism	
IT Architecture and Standards	Yes	Follow GITA Standards
Technology staffing resources	Internal	
Linkage to other stakeholders	Yes	

The Arizona Department of Health is a key agency for overseeing health services in Arizona. The agency is a major participant in the Homeland Security and Emergency response system planning, development and deployment. It has specific responsibilities relative to bio-terrorism. However, from an information technology infrastructure point of view they receive much of their infrastructure through services from the ADOA. Therefore from an infrastructure point of view they are not a major resource to build the 2-1-1 platform, but they do play a major role in the application portfolio and the distribution of information to the public.

Current As-Is Arizona Health and Human Services Infrastructure

Government Overview - **Department Emergency Management and Military Affairs**

Technology Domain	Organization Capability	Comments
Computing Platforms		
Windows Class Servers	Yes	Secure Facility, planned host for at least parts of homeland security applications
Unix Platform	No	
Main-frame Data Center	No	
Telecommunications		
Statewide Network	Linked	Planned critical participant for a future network operations center
Call Center Services	No	
Operational Call Center(s)	Yes	
Local Area Network(s)	Yes	
Telephony Systems	Yes	Part of state emergency response
Statewide Vendor Contracts	Yes	
Web Services		
Internet Service Provider	3rd party	
Operational Portal - Statewide	Web site	
HHS Web-Site	No	
Public – Private Partnerships	Yes	
Health and Human Services Application Portfolio	No	Focus is on emergency and homeland security requirements
N-1-1 Services	Input to N11	Requires linkage to N-1-1 providers
HHS Mission Critical Applications	No	Needs linkage and data from the other agencies portfolio
HIPAA Requirements	No	
Collaborative Technology Projects	Yes	Linked closely to Homeland Security and Emergency Management
E-Government Initiatives	Yes	
Statewide Databases	Yes	
Types	Windows	
Security – Emergency Response	Yes	First Line response system
Statewide Information Protection Center	Participant	Has critical involvement with the planned statewide information technology security system
Disaster – Back Up	Yes	Have own center and location
Uninterrupted Power Sources	Yes	
Homeland Security Requirement	Yes	
IT Architecture and Standards	Yes	Follows GITA Standards
Technology staffing resources	Internal	Also uses consultants
Linkage to other Stakeholders	Yes	DPS, DOT, GITA, ADOA, DHS

DEMA is a critical participant in planned systems for emergency management and homeland security. They are the agency most likely to be able to obtain funding streams for infrastructure to support emergency management business requirements. Strategically, it may make sense to build the foundation on this agency rather than replicating and duplicating infrastructure with other agencies that may have difficulty obtaining funding. This option may have less total cost for development and operation, but would certainly require investment in infrastructure at the DEMA facility to meet stated requirements and to be able to scale upward for peak volumes during emergencies.

Current As-Is Arizona Health and Human Services Infrastructure

Information and Referral Services Infrastructure Overview - **Valley of the Sun United Way**

Technology Domain	Organization Capability	Comments
Computing Platforms		
Windows Class Servers	Yes	
Unix Platform	No	
Main-frame Data Center	Mid-range IBM AS400	Hosts main database - FMS
Telecommunications		
Statewide Network	WAN	Phoenix, Chandler, Flagstaff
Call Center Services	No	Works through I&RS organizations
Operational Call Center(s)	No	
Local Area Network(s)	Yes	
Telephony Systems	PBX	
Statewide Vendor Contracts	Yes	
Web Services		
Internet Service Provider	3rd Party	Qwest
Operational Portal - Statewide	Web-site	Well maintained
HHS Web-Site	Yes	Critical information for funding much of the private sector HHS for the Phoenix Metropolitan Area
Public – Private Partnerships	Yes	Community Initiative, Community Development, Fund Raising
Health and Human Services Application Portfolio		
N-1-1 Services	No	
HHS Mission Critical Applications	Yes	Fund raising, Community Initiatives, Community Development and communication with the public. Nationally recognized automated system
HIPAA Requirements	No	
Collaborative Technology Projects	Yes	United E-Way / EC Fund
E-Government or E-Commerce Initiatives	Yes	Development of an Arizona HHS web portal for self help
Statewide Databases	Yes	
Types	Windows based AS400 FMS	
Security – Emergency Response	Yes	Security for current application portfolio
Statewide Information Protection Center	No	
Disaster – Back Up	Yes	Off site storage for back up tapes
Uninterrupted Power Sources	Yes	
Homeland Security Requirement	TBD	
IT Architecture and Standards	AIRS	
Technology staffing resources	Internal and contract	
Linkage to other stakeholders	Yes	Multiple

Valley of the Sun United Way (VSUW) is a key partner in the 2-1-1 Collaborative involved in the planning and development of the Arizona 2-1-1 System. They provide critical linkage to the communities and the private sector funding sources that are important to the project. The focus of this report is on review of current technology infrastructure. They are a key participant in the development of the option for building the future 2-1-1 system on new non-profit private sector infrastructure. The previous work completed with C-Sync Technologies could be revisited with Homeland Security requirements examined. The results of the C-Sync report have not been published and will not be discussed within this document.

Current As-Is Arizona Health and Human Services Infrastructure

Information and Referral Services Infrastructure Overview - **Phoenix – Community Information Referral**

Technology Domain	Organization Capability	Comments
Computing Platforms		
Windows Class Servers	Yes	
Unix Platform	Yes	
Main-frame Data Center	No	
Telecommunications		
Statewide Network	No	Available statewide through Internet Supports current business
Call Center Services	Yes	
Operational Call Center(s)	Yes	Operate 24X7 center following AIRS standards
Local Area Network(s)	Yes	
Telephony Systems	Yes – PBX with ACD	
Statewide Vendor Contracts	Yes	
Web Services		
Internet Service Provider	Yes – own provider	
Operational Portal - Statewide	Yes	
HHS Web-Site	Yes	
Public – Private Partnerships	Yes	
Health and Human Services Application Portfolio	Yes	
N-1-1 Services	No	
HHS Mission Critical Applications	Yes	Provides electronic data and also publishes hard bound directories for HHS Service Providers to use
HIPAA Requirements	No	
Collaborative Technology Project	Yes	Working with Tucson I&RS on joint database project called Milagro
E-Government Initiatives	Yes	Pilot project on HMIS for the homeless
Statewide Databases	Yes	Owns their provider services database
Types	SQL, Microsoft ACCESS and some specialized use of UNIX - proprietary	
Security – Emergency Response	Yes	Linkage to crisis centers
Statewide Information Protection Center	No	
Disaster – Back Up	Yes	
Uninterrupted Power Sources	Yes	Battery
Homeland Security Req't	None defined	
IT Architecture and Standards	AIRS	Active participant in the AIRS organization and its standards
Technology staffing resources	Internal Use consultants for programming	Staff is AIRS certified
Linkage to other stakeholders	Yes	Valley of the Sun United Way and Tucson I&RS

Infrastructure investment is required to build on the CIR technology platform. They are a viable alternative for the hybrid or decentralized call centers model. Both their call center operators and the technical staff are AIRS trained and certified. This adds a built in quality factor.

Current As-Is Arizona Health and Human Services Infrastructure

Information and Referral Services Infrastructure Overview **– Information & Referral Services, Tucson**

Technology Domain	Organization Capability	Comments
Computing Platforms		
Windows Class Servers	Yes	
Unix Platform		
Main-frame Data Center	No	
Telecommunications		
Statewide Network	Yes	Regional - serves southern five counties. MIlagro project with CIR is statewide
Call Center Services	Yes	
Operational Call Center(s)	Yes – currently upgrading technology	24X7 using AIRS standards, linked to crisis centers. 100,000 call per year with ACD
Local Area Network(s)	Yes	
Telephony Systems	Yes, adding ACD capabilities	
Statewide Vendor Contracts	Yes	
Web Services		
Internet Service Provider	3rd Party	
Operational Portal - Statewide	Web-site	
HHS Web-Site	Yes	
Public – Private Partnerships	Yes	Strong community outreach program
Health and Human Services Application Portfolio	Yes	
N-1-1 Services	No	Works closely with 911 PSAPs
HHS Mission Critical Applications	Yes	
HIPAA Requirements	Yes	Related to crisis center links
Collaborative Technology Project	Yes	Joint Database project with Phoenix CIRS organization to publish data on the web
E-Government Initiatives	Yes	HMIS Pilot project
Statewide Databases	Yes	Own Provider Database for Southern Arizona
Types	AIRS - IRIS	
Security – Emergency Response	Yes	Linked with crisis network
Statewide Information Protection Center	No	
Disaster – Back Up	Yes	Use Third party service
Uninterrupted Power Sources	Yes	Battery
Homeland Security Req't	None defined	
IT Architecture and Standards	AIRS	Active participant in AIRS and their standards development
Technology staffing resources	Internal and consultants	Limited staffing, limited funding AIRS certified
Linkage to other stakeholders	Yes	UW, CIR and crisis centers are key Local Gov't., HHS orgs

Infrastructure investment is required to build on the Tucson I&RS technology platform. They are a viable alternative for hybrid or decentralized call centers models. Both their call center operators and technical staff are AIRS trained and certified. This has an added value of built in quality and standards compliance.

Current As-Is Arizona Health and Human Services Infrastructure

Other Infrastructure Overview - **Amber Alert and All Alert Pilot Initiative**

Technology Domain	Organization Capability	Comments
Computing Platforms		
Windows Class Servers	Yes	
Unix Platform	Unknown	
Main-frame Data Center	No	
Telecommunications		
Statewide Network		Links through Internet
Call Center Services	No	
Operational Call Center(s)	No	
Local Area Network(s)	Yes	
Telephony Systems	No	
Statewide Vendor Contracts	Yes	
Web Services		
Internet Service Provider	Yes	
Operational Portal - Statewide	Yes	
HHS Web-Site	Specialized	
Public – Private Partnerships	Yes	
Health and Human Services Application Portfolio		
N-1-1 Services	No	Could link to 9-1-1
HHS Mission Critical Applications	Yes	Missing Children
HIPAA Requirements	No	
Collaborative Technology Projects	Yes	Working with DPS, City of Tucson, DOT, and National Broadcasters for Amber Alert and ALL Alert pilot program
E-Government Initiatives	Yes	Web based services
Statewide Databases	No	
Types	Unknown	
Security – Emergency Response	Yes	Missing children
Statewide Information Protection Center	No	
Disaster – Back Up	Unknown	
Uninterrupted Power Sources	Unknown	
Homeland Security Req't	Undefined	
IT Architecture and Standards	Independent	
Technology staffing resources	Internal	
Linkage to other stakeholders	Yes	

The Amber Alert and All Alert Infrastructure could be developed as a public access channel for emergencies involving missing children and other similar alerts. However, it does not have the infrastructure for call centers scaled to handle call volumes associated with broad emergencies to call centers using either a centralized or decentralized model. Historically, 2-1-1 call center operators are specialists that are certified and possess special training and skills related to HHS subject matter. It appears the strength of this channel is in information delivered through the Internet.

Current As-Is Arizona Health and Human Services Infrastructure

Other Infrastructure Overview

Prescott Information & Referral Service
Prescott and its surrounding areas, under the direction of Robert Moore, have started an information and referral service for the growing community. It is in the early stages of development and is limited in resources and funding. The organization should be reviewed further during the detail design of the system. It has needs that should be met. Particularly, under a distributed, regional call center model the northern part of the State may be better served with a 2-1-1 call center located in either Prescott and/or Flagstaff.

Local and County Governments
Local and County government information technology infrastructure has not been evaluated within the scope of this report. Primarily the scope of the request was to look at state infrastructure. Therefore, the subject of this evaluation is statewide 2-1-1 infrastructure alternatives. It is not felt that local and county government infrastructure, because of its local or regional nature, would be the foundation of a centralized model. However, these entities are viable infrastructure participants if a decentralized model is chosen for the architecture. At a minimum linkage is required to local health and human services data through the centralized HHS web portal and content stored in the master database for the call center(s) to use as required if a centralized or hybrid model is chosen. The large forest fires of the last two years has pointed out the need for improved communication of need and the availability of service from beyond the local area. The Arizona 2-1-1 System design should carefully consider the issue of improving the linkages between local, county and state levels of need and services available.

Arizona's Indian Reservations
In general, most of Arizona's Indian Reservations lie in rural parts of the State where telecommunications infrastructure is often lacking. The recent Community Service Link – 2-1-1 Public Hearings clearly showed residents on the Indian Reservations have a unique set of needs for health and human services that are not being fully met today. The planning for 2-1-1 in Arizona should address the issue of how to get improved infrastructure on the reservations to serve as communication channels for meeting needs. Indian-Gaming revenue could be looked at as a future funding stream to help develop the necessary infrastructure.

Arizona Community Action Alliance
The Arizona Community Action Alliance (ACAA) infrastructure was quickly reviewed because of an application they have published on the Internet that provides citizens with quick easy access to an assessment toll for determining eligibility for specific health and human services programs. The service can be found at the location of www.arizonaselfhelp.org

The self-help application has been licensed from a company that is based in Oregon. Internet hosting for the application is from the same Oregon Company. The original application was developed through public private partnership in the State of Oregon and is a part of their health and human services delivery system in that state. It has been customized for Arizona use and has been blessed and reviewed by proper authorities for its validity and accuracy including the IRS and DES.

Arizona Community Action Alliance has very limited resources and built this application with limited funding from grants. They have no plans or interest in developing and or providing infrastructure for the state 2-1-1 system. However, their web-site is of value and should be linked to from the state 2-1-1 web site when it is developed.

Crisis Centers
For the purposes of this report crisis centers are viewed as specialized and local call centers to deal with specific individual, family or local emergencies. They would be a vital part of the overall 2-1-1 system but would not serve as a foundation for building statewide call centers or as the foundation for the statewide databases and the web self service delivery channel. Linkage to these services would be provided from the primary system when it is developed.

2-1-1 TECHNOLOGY INFRASTRUCTURE ALTERNATIVE ASSESSMENT REPORT

Planned Changes to Current Infrastructure

Planned or Active Technology Projects that impact 2-1-1 System Infrastructure

The Arizona Health and Human Services collective applications portfolio is not static but continually changing its features and functions. In designing and developing the State 2-1-1 layer for service delivery to citizens it should be understood that the environment is very dynamic. For this purpose, a list of known IT related projects are included to familiarize decision makers with how these projects may or may not impact infrastructure decisions for this initiative. Specifically it should be noted that undefined or unclear Homeland Security System Requirements can add cost and risk to selecting the infrastructure alternative.

It should be understood that the business functions and applications that satisfy those business functions will change over the planning and development life cycle for the phases of Arizona 2-1-1 deployment.

Project Name	Owner	Prjt. Stat	Cmpr Pltfm	Net Wk	Call Ctr.	Telc Sys.	N11 Svc.	Web Svcs.	DB Sys.	DW Sys.	Secrty Sys.	Appl Prtflo
Arizona Self Help	ACAA	Active			Yes			Yes				Yes
7-1-1 Contract Upgrades for Internet	ACDHH	Planned					Yes	Yes				
ATS Outsourcing	ADOA	Active		Yes	Yes	Yes						
Operation Enclave	ADOA	Planned	Yes	Yes					Yes		Yes	Yes
9-1-1 Wireless Deployment	ADOA	Active					Yes					
HIPAA	ADOA	Active	Yes	Yes				Yes	Yes	Yes	Yes	Yes
5-1-1 System Upgrades	ADOT	Planned			Yes		Yes					
Kids Care Web Service	AHCCCS	Active						Yes				
Call Center - Telephony	AHCCCS	Active			Yes	Yes					Yes	Yes
Homeland Security Projects	DEMA/ OHS	Planned	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Emergency Management	DEMA/ OHS	Planned	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HHS 211 requirements	211 Team	Active	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes
CPS Evolution	DES	Active	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes
Web-based bio-terrorism info	DHS	Active			Yes			Yes	Yes			Yes
BRITS	DOR	Active	Yes	Yes	Yes			Yes	Yes		Yes	Yes
AIRS Standards	GITA	Planned			Yes			Yes	Yes		Yes	Yes
Technology Architecture	GITA	Active	Yes	Yes				Yes	Yes	Yes	Yes	Yes
State Web Portal Upgrades	GITA	Active		Yes				Yes				Yes
TOPAZ	GITA	Active		Yes	Yes	Yes						
Telephone System Upgrade	I&RS - Tuc.	Active			Yes	Yes						
HMIS Pilot Project	CIR/IRS	Active	Yes	Yes	Yes				Yes			Yes
Milagro DB Project	CIR/IRS	Active	Yes	Yes	Yes			Yes	Yes		Yes	Yes
All Alert Nation Pilot Project	TBD	Active			Yes			Yes				Yes
Disaster Recovery Data Center back up	ADOA DES, DPS	Planned for approvl	Yes	Yes					Yes			

Lessons Learned from other State 2-1-1 Initiatives

The National Report on the status of 2-1-1 system deployment in America has a great deal of useful information. The following is a list of the most significant lessons learned:

- 82% of the States that have successfully deployed a 2-1-1 system have used a decentralized model for call centers. Reasons for this statistic are explored in the report.
- To date, only 4 States have achieved “statewide“ status for their 2-1-1 systems. This means the 2-1-1 service is available to all locations within a state. Only two states operate their call centers on a 24X7X365 basis.
- To date, most states have deployed call centers first with associated infrastructure, followed by self-help web services.
- States currently planning deployment of 2-1-1 systems are taking a more balanced approach using both the telephony service delivery channel and the Internet channel for self help applications and web based services for citizens.
- Project funding is a major issue. Some states have had to either slow up deployment or delay implementation because of funding shortages.
- 2-1-1 projects require a high degree of government and private sector collaboration to be successful. The systems are complex in nature with high risk associated with the projects. Delivery schedules are often measured in years.
- States currently planning deployment of 2-1-1 systems are taking a more balanced approach using both the telephony service delivery channel and the internet channel for self help applications and web based services for citizens.
- Project funding is a major issue. Some states have had to either slow up deployment or delay implementation because of funding shortages.
- 2-1-1 projects require a high degree of collaboration to be successful and are complex in nature with high risk associated with the projects. Delivery schedules are often measured in years.

Exhibit 5 contains a chart that shows a summary of the infrastructure and deployment strategies utilized by other states with operational systems. A quick review of the latest information posted to the national web-site shows the following update.

- Delaware has delayed their deployment until next year for a combination of business and funding reasons.
- Idaho is working to enhance their deployed system with an Internet mapping project for the rural parts of their state. This project is being carried out jointly with the Rural Policy Research Institute. Funding shortages has also delayed their plans of making their statewide 2-1-1 call center service available on a 24x7 basis.
- Illinois plan to fund and build 6 pilot 2-1-1 sites has been delayed when the governor vetoed the bill passed by the legislature. Supporters plan to try for override of the veto when the legislature next convenes.
- Indiana plans to have their statewide system operational in 2005
- Maryland’s plan to deploy in January 2004 is in jeopardy because of technical land based wire line issues to the call centers and also wireless issues for carriers that would have to re-direct wireless 2-1-1 calls.

Massachusetts is following a strategy similar to what Arizona is considering where the state government owns and provides the 2-1-1 database. The Massachusetts Executive Office of Health and Human Services has developed the software and donated equipment, software and training to the call centers. However project implementation has been delayed because of overall funding shortages among the various stakeholders.

Factors that impact Arizona 2-1-1 Infrastructure Decisions

Analysis has shown that there are viable sources of existing infrastructure that can be leveraged in building the 2-1-1 systems. This can be weighed against the alternative of building all new infrastructures to support this initiative. Any alternative selected will require investment. Finding the optimal solution will be influenced by the factors identified below.

Selection of a 2-1-1 Service Delivery Model
It is recognized that selection of the service delivery model is based on variables other than technology considerations. This includes funding source availability, political, governance, public-private partnerships, business needs, and scope of project. At the present time government officials are leaning toward selection of a hybrid service delivery model tailored specifically to Arizona needs.

Emerging Technologies
There are several advancements of telecommunications technologies and computing hardware components that make it much easier to link silos together. Enterprise Application Integration software known as “middleware” also does a great deal to facilitate hybrid solutions. The good news is that there are technology options available if funds can be found to procure the solutions and either acquire the skills to operate or manage complex contracts to have private sector organizations operate the infrastructure and applications for government.

Outsourcing of Government Infrastructure
The Arizona Department of Administration has been a recognized provider of technology infrastructure services for other government entities for the past twenty years. This has included the Arizona Telecommunications System with major services for backbone data network services called (MAGNET), Call Center Services and a telephone system for government agencies in Phoenix and Tucson. The 2003 legislature requested that GITA and ADOA look at the option of out sourcing these services to the private sector. The RFP has been prepared and is being evaluated by the legislature for release to bid and award. The outcome of that process has impact on using ADOA as the primary foundation infrastructure for 2-1-1. It does not rule it out, but creates a level of uncertainty and adds another variable that must be considered. Decision makers should have additional conversation to discuss the ramifications of this alternative.

Evolving Business Requirements
A government decision has been made that Homeland Security Requirements be a part of the overall Arizona 2-1-1 long-term vision and deployment plan. Their Strategic Plan published in 2003 clearly shows action items and objectives related to the 2-1-1 initiative. This business requirement changes the boundaries for the system, adds features and new technology requirements and also changes the complexity and content of the RFP for the primary 2-1-1 software application. Additional time will be required to factor in these requirements and to collaborate with stakeholders.

Governance
The selection of a governance model and the development of roles and responsibilities for stakeholders are important for making certain that infrastructure decisions are agreed upon and carried out consistent with the vision and needs of the project. It is necessary make investments in technology infrastructure. False starts are costly in time, money and resources and can not be afforded.

Ownership of Data
Data that must be integrated for success of the 2-1-1 Initiative is currently buried in individual silos. Ownership and sharing of the silos of data will be an issue which influences the decisions for placement and ownership of the system infrastructure.

Integration of E-Government Initiatives
The Arizona 2-1-1 Initiative definitely involves e-government applications. Over time a series of best practices and standards for success have evolved. The list on the following page is a variation of a grouping of subjects that the Gartner Group first published in 2001.

2-1-1 Business, Technology and Infrastructure Requirements Overview

Top Ten Issues for Successful Deployment of Electronic Government

	Subject	Description
1	**e-Security**	IT security takes on a whole new dimension under e-government. The requirements for expanded firewalls, data security, public key infrastructure, encryption, customer validation and authentication, intrusion detection, privacy and trust are all necessary. This issue places great stress on infrastructure, skills, policies and standards.
2	**e-Governance**	The goal is for one-stop shopping and seamless government at all levels. A new model must be developed to govern the IT environment. Much broader collaboration and sharing of data must be incorporated into the business processes and plans.
3	**e-Procurement**	Under digital government more of the procurement function will be accomplished electronically. Processes must be re-engineered and systems developed to accomplish results quickly.
4	**Customer / Client Relationship Management**	CRM as it relates to government is still evolving. However, the challenges of tracking and managing relationships with a much larger, more complex array of customers and stakeholders is enormous. Further automation will be necessary with specific applications devoted to support for managing boundaries.
5	**Business Process Transformation**	Business process re-engineering is at the heart of e-government. As more and more services are delivered on-line, major shifts in the types of employee skills and resources required to develop and maintain systems are necessary. Systems must be available, reliable, fast and secure. This will place increased stress on government infrastructure for the expanded information technology.
6	**Enterprise Architecture**	Silos will not work well under electronic government with one stop shopping and communities of interest for cross agency application portfolios. Governments must develop an IT architecture with specific domains must be defined, developed and maintained. Without architecture the cost of e-gov't. will be much greater.
7	**Sourcing**	More formal processes must be developed and refined to determine the best source of e-government products and services that relate to skills, infrastructure, architecture and applications required to further deploy electronic service delivery.
8	**e-Government funding**	It is certain that e-government is not free. Investment and funding is something that must be carefully planned and reviewed so there is consistency between plans, execution and funds actually available to keep the several major components of Portals, security, infrastructure, architecture, applications, process re-engineering consistent and in synchronization..
9	**HIPAA**	This evolving federal mandate for data and reporting requirements will place a broad set of requirements on many government entities that must conform to its policies and standards. This places constraints and adds cost to application development.
10	**Portals**	The Portal is the foundation interface with the customer. There are many beneficiaries of e-gov't. They include the general public, employees, government itself and the business community. To address the interests of each of these groups and avoid privileging one at the expense of another, formalized mechanisms should be established to assess beneficiaries' information needs and concerns. Portal services should reflect those needs and include measures for on-going evaluation of impact and effectiveness.

2-1-1 Business, Technology and Infrastructure Requirements Overview

Overview of Service Delivery Channels
Exhibit One depicts a model for 2-1-1 service delivery and the inter-relationship of business requirements, citizen needs and contact points, the application portfolio, infrastructure and skills necessary to successfully deploy the system. A citizen based feedback loop is a key component to measure effectiveness in delivering services. From this chart it can be seen there are six channels for delivering health and human services to the public. This includes:

1. face to face
2. mail/fax
3. wireless
4. kiosk
5. telephony
6. Internet or web

The 2-1-1 model for Arizona focuses on the integration and further enhancement of the telephony and Internet based delivery channels. This very much makes 2-1-1 a technology project. It must be managed as such. Best practices for technology projects should be understood and adhered to during the project life cycle.

Collaboration of Stakeholders
The number of stakeholders involved and the complexity of the Arizona Vision for 2-1-1 make it essential that a Governance Model be established that defines roles, responsibilities and boundaries for participants here in Arizona. There is room and need for all parties to contribute to the future success of the system. No stakeholder should be left behind. However, the further deployment of technology to assist with seamless delivery of services to citizens will require change for all the stakeholders and the organizations they represent.

Health and Human Services Systems
Gartner Group Research clearly shows that there is a restructuring of government services taking place particularly for Health and Human Services Delivery. One name that has been coined for it is “Welfare Reform”. However, in recent years it has become more than that. Technology advances has made it possible to re-invent government and make it much more responsive to citizen needs. A recent example of this change is the city of New York deployment of a 3-1-1 System that stream-lined government and makes it more responsive and accountable to citizens. The cost to develop the system was 25 million dollars and is based on application and infrastructure features found in Customer Relationship Management Systems. To date it has been reported to have saved 43 million dollars. This past summer this scalable system with a centralized call center was able to handle over 115,000 telephone calls in a little over an hour during the “power blackout”. Government decision makers need to decide if the Arizona 2-1-1 initiative is to carry the weight of striving to stream-line and re-invest some of the health and human services agencies in the state.

Health Insurance Portability Accountability Act
The Federally mandated HIPAA requires that entities dealing with people’s health information provide adequate protection for the citizen’s data. The Arizona broad vision for 2-1-1 deployment will require that participants pay close attention to the requirements of the law to ensure that data is properly safe guarded. State Government agencies have been involved with modifying existing systems to comply with HIPAA requirements for the past three years and are all familiar with what will be necessary for this set of applications. Violations of HIPAA provisions carry a $50,000 fine per occurrence even for accidental disclosure. Angela Fisher is the state coordinator for HIPAA and can be contacted through ADOA.

2-1-1 Business, Technology and Infrastructure Requirements Overview

Homeland Security Interfaces, Data Access Needs and Linkages
Since the events of September 11, 2001, a set of new requirements have been evolving for Emergency Management and Homeland Security Systems. These requirements impact 2-1-1 scope and deployment strategies. It makes sense to use emerging 2-1-1 and 3-1-1 public access channels to help meet emergency management communication needs without spending the money to develop a parallel set of infrastructure In order to be effective and efficient in delivering service to the public and to provide Homeland Security with needed data for threat analysis. The Arizona 2-1-1 Initiative should include this set of requirements. Several major national technology service providers have already built and deployed architecture models for linking 2-1-1/3-1-1 with Homeland Security Requirements. However, at this time for Arizona these Homeland Security and Emergency Management Requirements are not well defined. This impacts timing for release of the Application RFP. It also makes it difficult for those given the task of building and managing the technology infrastructure to have sufficient information to know they have properly scaled infrastructure components to meet the Homeland Security and Emergency Management Needs. This set of critical business and technical requirements have not been previously addressed in other state's 2-1-1 deployments. Therefore, Arizona becomes a pioneer. Decision makers must look closely at assigning accountability for achieving success with this broader set of requirements.

Alliance of Information and Referral Services National Standards
This national Alliance has developed a set of standards for 2-1-1 deployment with new data access protocols being adopted by the national body in the past few months. These standards should be followed in designing and developing the Arizona solution. A core 2-1-1 System Application Business and Technical Requirements document is currently under development by the State 2-1-1 Planning team. It has included the AIRS standards as a part of the requirements for prospective bidders to consider in their responses. AIRS standards should be adopted by GITA and made a part of the IT guidelines for the sharing of information between health and human services organizations.

AIRS also has a program for education, certification and accreditation of public and private organizations involved in providing the public with information and assistance. The scope of these services also includes professional certification for both technical and call center professionals working in I&RS organizations.

Linking with other E-Business and E-Government Initiatives
The 2-1-1 Business Plan should acknowledge the existence of other major strategies and electronic initiatives that have impact on the success of 2-1-1 in Arizona. This includes such things as:

1) The legislature's desire to change the boundaries and business practices that has governed the ADOA Arizona Telecommunication System service delivery channel. Outsourcing of this function creates an additional variable that must be considered if 2-1-1 decision makers decide to build the application portfolio around ADOA infrastructure.

2) Review the content of the several GITA approved or pending approval projects for electronic government and infrastructure initiatives for the Departments of Health, Revenue, Transportation, Economic Security and AHCCCS. Exhibit 4 contains the list of projects that have been discovered during the analysis for this report. However, there may be other projects. GITA should be used in their oversight role to help determine any critical projects that impact the success of the 2-1-1 initiative.

Project Costs and Funding Sources

Overview – Total Cost of Ownership

The Government Information Technology Agency Project Investment Justification Process (PIJ) uses a variation of the Gartner Group total Cost of Ownership Model for using a standardized process for predicting project costs when they are being considered for approval. Either the Gartner model or the GITA model can be used for preparing project cost estimates. However at this time, there is insufficient data available to determine the quantities required for the various technology infrastructure components. Once additional design features are made and an owner selected for the infrastructure it will be possible to prepare realistic estimates, for the portion of the project that is government related. The PIJ model can also be used as a tool to provide decision makers with rough order of magnitude estimates for development and operation costs of the planned system once basic decisions are made on the 2-1-1 Service Delivery Model to be used for Arizona and the number of call centers to be operated and the owners of the centers.

The major cost categories for components of the project will include:

- Overhead – Project Management and Administration
- Procurement Resources to support acquisition of all buy components
- Facilities and Work Space for Project Execution
- Project Infrastructure – includes phones, fax, copiers, computers, printers, LAN, etc for the project
- Quality Assurance Resources
- Business Process Re-engineering and Work Flow Management Support Team
- Applications Portfolio Development and Maintenance
- Human and Technology Skills required for development and operation of the system(s)
- System Infrastructure

A detail cost model must be developed to prepare the project investment justification.

This report is concerned only with the technology infrastructure required to develop and support the system. The technology infrastructure categories include the following major components:

Sample 2-1-1 Technology Infrastructure Cost Component Model

Category and Item	Description	Quantity	Unit Cost	Extended Cost
Telecommunications				
Voice Equipment				
Phones - Desktop		TBD		
Cell Phones	For emergencies	5 – 10		
Switches	PBX and other	TBD		
Data Network Components				
Switches		Per loc		
Hubs		Per loc		
Gateways		1 set		
Routers		Per loc		
Cabling				
Voice		Per loc		
Data		Per loc		
Leased Lines (Multiple)	Voice and Data	TBD		
Computing Infrastructure				
Racks and Miscellaneous Hardware	For servers	1 – 3		
Servers				
Email		1		
Web		1		
Application		1		
Database and / or File		2		
Print		1		
LAN		3		
Development and testing		1		
Desktop Workstations with Monitors		25 – 50		

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Category and Item	Description	Quantity	Unit Cost	Extended Cost
Computing Infrastructure				
Laptops		3 – 10		
Hand-held computers or pagers		TBD		
Storage Area Network Devices		2		
Network Attached Storage Devices		2		
Back up Tape Storage Units		1		
Printers		2- 5		
Scanners		1 – 3		
Call Centers Infrastructure				
Workstations with monitors		50 – 100		
Computer Telephony Interface	Server	1 per ctr.		
Phones		50 – 100		
Security				
Firewalls		1 per loc.		
Servers and Monitoring Devices		2 – 4		
UPS equipment		1 set		
Batteries		1 set		
Generator		1 - 2		
Software				
Operating Systems - Multiple	Network & Desktop	1 – 6 50 - 100		
Call Center Management	For each call ctr.	1 per loc		
Security Products	For each location	1 per loc		
Desktop Support – Office Suite		50 – 100		
Database Systems	Central Center	1 - 3		
Data Warehouse Tools		2 – 4		
Technical Support Tool Set		1 – 3		
Network Management	Central Mgmt all Networks	1		
Enterprise Application Integration		1		
HHS Applications - Buy	Multiple products	TBD		
Web Development - support tools		2 – 4		
Business Process Re-engineering		1 – 3		
Project Management tool Set		1		
Total Estimated Cost of Infrastructure			TBD	TBD

The table is presented for illustration purposes only. Insufficient detail is available to populate the quantity and cost fields accurately. The key point is there is a great deal of infrastructure required to support this project. If current infrastructure is not leveraged the project is faced with large expenditures to acquire the entire necessary infrastructure.

Current Costs for Health and Human Services Operating Call Centers

Infrastructure costs for Call Center Services

Call Center Source	Cost
I&RS Private Sector Call Centers	$ TBD
ADOA State Government ACD and IVR Call Centers	$650,000 *

It should be noted that other states have experienced an approximate 25 - 40% increase in call volumes when 2-1-1 services are turned on and advertised to the public. It will be necessary to scale Arizona Call Center(s) upward to meet the volume increases.

* direct cost only

Project Costs and Funding Sources

Infrastructure Development Costs
It is not possible to estimate the costs of infrastructure until more decisions are made relative to: the 2-1-1 Service Delivery Model; the owners of the project infrastructure; the number of call centers and their owners; system design features; the extent that existing business processes will be automated and the volume of data that may be required to be stored and transported; new applications and the amount of infrastructure needed to support the application: security components and the features and functions that are being secured. The major categories of system development costs are contained in the following table.

2-1-1 Project Development Cost Categories

Cost Category	Expected Cost
Project Management and Administration	TBD
Project Staffing – Technical, Business and Clerical	TBD
Outside Professional contracts and services	TBD
Facilities, Space, Utilities, Fax, Copiers, Printing, etc.	TBD
Quality Assurance and Risk Mitigation	TBD
Project infrastructure – Hardware and Software	TBD
System Application Development - (Make or Buy)	TBD
Supplies	TBD
Travel - Collaboration	TBD
Procurement, Contract Management and Administration	TBD
Totals	TBD

Overview – Infrastructure Operating Costs
It is too early to determine 2-1-1 Operating Costs with any degree of accuracy because too many variables are still unknown. However, the following facts can be provided for decision makers to assist them with their decision making process.

New 2-1-1 System Operation Costs
It is expected that either a new entity will be created or the responsibilities of one or more existing entity will significantly be increased to own and manage the applications, databases and infrastructure required for statewide 2-1-1- telephony, web based self services and the applications currently being discussed as a part of the vision for Arizona 2-1-1. All of this will be new dollar costs to the stakeholders. Total cost can be minimized by leveraging existing resources. The following cost categories will be required to support the 2-1-1 system(s) during the first few years while the application portfolio in maturing and stakeholder responsibilities and boundaries are continuing to evolve as greater efficiency is achieved in delivering more electronic services and self help.

Cost Category	Expected Cost
Personnel and ERE	TBD
Outside Professional contracts and services	TBD
Facilities, Space, Utilities, Fax, Copiers, Printing, etc.	TBD
Telecommunications Costs this includes Leased lines, ISP, Carrier Services, Telephony, etc to support the network(s)	TBD
Hardware Leases, Maintenance contracts and repairs	TBD
Software Licenses	TBD
Operating Supplies	TBD
Back Up and Recovery Contracts and Testing	TBD
Capital Equipment Costs – Technology Refresh and upgrades	TBD
Contract Management and Administration	TBD
Totals	TBD

Project Costs and Funding Sources

Staffing Requirements
New infrastructure and new applications will require new technical skills and resources to support it. A make – buy decision can be made to determine if employees or contractors are used to perform the necessary tasks of managing, maintaining and enhancing components as required. The following categories of technical skills are listed in the table below.

Technology Skill Requirement	Quantity	Cost
Project Managers and Team Leaders	1 – 3	
Technology Managers	1 – 3	
Network Administrators (per network primary location)	1	
Network Specialists	2 – 4	
Web Master	1	
Business Analysts for Process Re-engineering	1 – 3	
Application Developers (Programmer / Analysts)	2 – 6	
Web Developers	1 - 3	
Database Administrator	1	
Database Specialists	1 - 3	
Data Warehouse Specialists	1 - 3	
Security Specialists	1 - 3	
Technical Support Specialists	1 - 3	
Operations staff for back up and recovery	1 - 4	
Content Management Specialists for Web pages	1 - 3	
Call Center Applications specialists for scripting	1 – 2	
Enterprise Application Integration Architects and Product Specialists	1 - 2	
Totals ** Depends on ability to leverage either existing resources or to leverage contract people coupled with other system components such as software, hardware or applications acquired through partnerships. ** based on average of salary and ere of $70,000 for each FTE	19 - 48	$1,300,000 $3,400,000

All of these skills are required for the size and complexity of this project. The amount of existing skills that can be leveraged to minimize new dollars for staffing will be a function of what organizations are selected to host and support the infrastructure and applications. It should be noted that this set of skills covers all technical aspects of the project. It is also possible that some of the skills have be out sourced and handled by contractors.

Project Costs and Funding Sources

Funding Options

Current economic conditions in Arizona will make deploying the 2-1-1 initiative difficult. Traditional boundaries for private sector participation with government and the budget picture for state government make it nearly impossible to fund the 2-1-1 initiative from current sources. United Way does not have the resources to independently fund the complete cost of applications, infrastructure and human – technical skills required to deploy the complete 2-1-1 initiative. Collaboration of existing funding streams must be cultivated and explored. In addition, new sources such as emerging national grants from Homeland Security, Bio-Terrorism and National 2-1-1 programs must be evaluated and applied for to build the 2-1-1 system in Arizona. The following table gives a more complete picture of the funding options.

Funding Streams for N-1-1 Programs and Health and Human Services Programs

Source of Funding	Current	Future
Federal Government		
Various Federal grants and allocations	X	X
Bio-Terrorism State Grants		X
Homeland Security State Grants		X
2-1-1 Legislation (Pending congressional approval)		X
State Funding		
Current Legislative appropriations	X	
New Legislative appropriation - must be formulated in budget		X
Current special tax or tariff	X	
New special tax or tariff – must be built into future budgets		X
Issue Bonds for Infrastructure and Application Development		X
Local and County government including Indian Reservations		
Allocated appropriations	X	X
Indian Gaming		X
Private Sector funding		
Valley of the Sun United Way & other United Ways	X	X
I&RS Self Funded (Sale of Directories and other activities)	X	X
Private Sector Individual and/or Corporate contributions	X	X

The above list may not be complete but could serve as a guide for decision makers to explore for obtaining the necessary funds to build and operate the 2-1-1 system.

2-1-1 TECHNOLOGY INFRASTRUCTURE ALTERNATIVE ASSESSMENT REPORT
Summary of Findings

Infrastructure Variables - 2-1-1 Service Delivery Model Options
There are three 2-1-1 Service Delivery models to choose from for Arizona. They are Centralized, Decentralized or a Hybrid combination with some features – functions being centralized and other components being decentralized. General advantages and disadvantages of each option are listed in the table below. The Arizona Scope and Vision for 2-1-1 Service Delivery is very broad, much more extensive than some of the systems that are operational today in other states. This is a critical factor in choosing a model for Arizona. Lessons learned and other state success can be used to assist in Arizona decisions. However, the planned scope, complexity of requirements, vision, as-is situation, politics, emerging trends collaboration of stakeholders, all point to the fact that this is a unique opportunity with specific risks and costs that must be uniquely managed for this State. Analysis shows that the current model in use today for delivering health and human services for Arizona is a Decentralized Model. That is the base on which migration to the future must occur.

2-1-1 Service Model	Critical Risks	Key Advantages	Key Disadvantages
Centralized Single Call Center and Operations Support Center for the Database, Applications and Web based systems with a single integrated, secure voice and data network	• local needs will not be adequately met with centralized model • Compromise involved with getting central solution will dilute effectiveness and efficiency • Single point of failure will require stronger redundancy in back up capability with higher associated cost for back up • Harder to achieve collaboration either government or private sector stakeholders feel disenfranchised	• Least cost to operate • Tighter control over project variables for success	• Very difficult to roll silos into a single location • Most expensive development costs • Disrupts current service channels and business processes in both gov't and private sector orgs. • Difficult stakeholder buy-in • Most difficult option to achieve. Has highest degree of process re-engineering • Harder to serve local needs on a consistent basis
Decentralized Multiple Call Centers locations throughout the State. Self Service Supprt System could be through multiple facilities and linked by networks	• Cost will be prohibitive and difficult to obtain necessary funding • Failure in getting integration to work over a variety of locations • Greater risk of security breech • Risk in not meeting Homeland Security Requirements	• Easier to get all stakeholder buy-in • A single point failure can be localized without disrupting the whole system • Easier to execute project in granular phases	• Most expensive alternative to build and operate • Difficult to keep distributed data in sync and accurate • Difficult to recovery from major system failure • Requires more total resources • More work to meet Homeland Security Requirements

2-1-1 TECHNOLOGY INFRASTRUCTURE ALTERNATIVE ASSESSMENT REPORT

2-1-1 Service Model	Critical Risks	Key Advantages	Key Disadvantages
Hybrid Decentralized Call Centers With Centralized Operations Center and Hub for managing the applications, databases and other project infrastructure	• Integration problems with multiple sites and split infrastructure	• Facilitates collaboration and balanced involvement • Easier to fund using all stakeholder sources • Optimizes localized knowledge and service for call center effectiveness • Optimizes back up and recovery requirements for central operation center • Leverages existing resources to link with back end legacy without the cost of replacing all of it • Easier stakeholder buy-in	• More expensive than centralized model • Less efficient than centralized model

Table for Centralized vs Decentralized vs Hybrid Service Delivery Model

Summary of Findings

Infrastructure Alternatives - continued

Government vs. Private Sector Infrastructure Options
The disadvantage of choosing government infrastructure without private sector participation or visa versa is that many of the advantages of optimized solutions are lost. The choice of building infrastructure is definitely multi-dimensional. The whole is greater than the sum of the parts. Arizona's current model for delivering health and human services is a Hybrid combination of government and private sector infrastructure. That is the basis on which the 2-1-1 system must migrate to the future.

Infrastructure Alternative	Risks	Key Advantages	Key Disadvantages
State Government Only For both the call centers and Operations Center	• Loss of private sector support and funding • Does not support integration of requirements • Places vision at risk	• Easier to control government success variables	• Very difficult to achieve goal of community involvement • Government funding streams may not be sufficient to execute the project without sacrificing scope and vision.
Private Sector Only For both the Call Centers and Operations Center	• Loss of Government agency support and funding streams • Does not support integration of all requirements • Places vision at risk	• Easier to control private sector success variables	• Difficult building Homeland Security requirements on the private sector • More difficult to achieve effectiveness and efficiency in reaching goals • Private sector funding streams will not be sufficient to execute the project without sacrificing scope and schedule
Hybrid - A mixture of Government and Private Sector components based on best fit	• Minimizes risks	• Increases probability project can be funded without reducing scope • Best supports project goals	• Complexity of collaboration is difficult to manage

Summary of Findings

Infrastructure Alternatives - continued

Summary of Infrastructure Options
The following chart rates the infrastructure options relative to each other based on the variables of: ease of migration; cost – ease of funding; supports 211 goals; meets business requirements; fosters stakeholder collaboration; scalable for future needs.

Options for Service Delivery Model and Infrastructure Foundation	Ease of Migration Scale 1 -5	Infrastructure Cost and Ease of Funding Scale 1 - 5	Supports 2-1-1 Goals and Vision Scale 1 – 5	Meets All Business Requirements Scale 1 - 5	Fosters Collaboration Scale 1 - 5	Scalable For Future Needs Scale 1 - 5	Total Score
Centralized – Govt.	1	3	3	2	1	3	13
Centralized – PS	1	1	3	3	1	3	12
Centralized – Hybrid	2	4	3	3	2	4	18
Decentralized – Govt.	3	2	4	3	3	3	18
Decentralized – PS	3	2	4	3	3	3	18
Decentralized – Hybrd	5	3	4	4	4	4	24
Hybrid – Govt.	3	3	4	3	3	3	19
Hybrid – PS	3	3	4	3	3	3	19
Hybrid – Hybrid	4	5	5	5	5	5	29

Scale of 1 = Low or poor to a Scale of 5 = High or good

The 2-1-1 Infrastructure option that best meets the project needs is a Hybrid Service Delivery Model and Shared Ownership and Operation of Infrastructure by both government and private sector organizations.

Further detail is needed including completion of the scope document and the development of the governance model before viable decisions are made for hosting of infrastructure components and the locations and bandwidth of the network required to connect the major stakeholders with security adequate to protect data, infrastructure and applications. The chart on the following page shows a subjective capability matrix of the current options for the infrastructure to support the Arizona 2-1-1 project. At the present time, When a composite of all current available infrastructure components is reviewed it appears that the Arizona Department of Economic Security is the most qualified entity with vested interest in the system to use as a foundation for building the future system. The Department of Administration follows closely, but for a different set of reasons. They are by current statute the state agency authorized to provide infrastructure services to other agencies. The Department of Public Safety could also be considered, primarily because of Homeland Security Requirements. That agency is normally not associated with Health and Human Services Systems.

The primary disadvantage of building the complete 2-1-1 system on new, private sector infrastructure is the cost associated with acquiring and or developing the necessary infrastructure and with meeting the security requirements for a system that houses criminal justice and homeland security data associated with the Arizona long range vision. It will be very difficult for government agencies responsible for the functions to yield that function to the private sector. In some instances the legislature may have to become involved in changing the responsibilities and authority aligned with in state government.

GITA and DEMA, while not suited as infrastructure hosting sites they both play critical roles in the project because of their existing ownership of requirements, architecture and standards. The Office of Homeland Security is still emerging and its information systems are not clearly defined, but do fall within the scope of influencing what happens with the 2-1-1 system requirements and placement of infrastructure.

All of these factors point to the need for integrating infrastructure to minimize costs.

Infrastructure Alternatives - continued

Summary of Infrastructure Options

Critical Infrastructure Capability Matrix

Critical Infrastructure Components and Capability	DES	DOA	DPS	GITA	DEMA		Phx CIR	Tuc I&RS	New 501C3
Facility to Host Infrastructure	3	3	2	1	3		2	1	New
Call Center Operations	3	1	2		2		3	3	New
Call Center Infrastructure Services	1	3	2		1		2	2	New
Scalable Statewide Network	3	3	2	1	2		1	1	New
Computing Center	3	3	3	1	2		2	2	New
Health and Human Services Application Portfolio Hosting and Support	3	2	1	1	1		2	2	New
Internet Web Portal Hosting and Support	2	2	2	3	2		2	1	New
Database Hosting And Support	3	2	3	2	3		2	2	New
System Security Capability	2	2	2	2	3		2	2	New
Disaster Recovery and Back Up Capability and Scalability	2	3	3	1	3		2	2	New
Technology Architecture and Standards	2	2	2	3	2		2	2	New
Large Scale Technology Project Management Experience	3	3	3	3	2		2	1	New
N-1-1 Experience	1	2	1	1	1		2	2	New
Infrastructure Funding Capability	1	1	1	1	3		2	2	
Total Score	32	32	29	20	30		28	25	**

Scale for the above table
- blank – very limited or no capability
- 1 - Weak capability not suited for scope of this project
- 2 - Existing capability difficult to scale for this project
- 3 - Existing capability that is scalable

** It is not possible to score this option until after scope and governance are agreed upon for those components that may reside within the private sector as a new entity.

The risk, cost and extensive work required to integrate or create new infrastructure should not be overlooked. "No Wrong Door" was a health and human services initiative under the Hull administration that never got past the planning stages because of the complexity of the application and the infrastructure issues involved in getting the one-stop-shopping approach to work. This endeavor should be looked at for lessons learned because the scope of work 2-1-1 faces is contains many of the same issues previously faced without coming up with workable solutions.

Project Risk Mitigation
The overall Arizona 2-1-1 Project is high risk. The following table identifies the major risk categories that must be defined, evaluated and mitigated during the phases of the development cycles.

Risk Category	Comments
Scope of Arizona project and vision	No other state has deployed a 2-1-1 project of this complexity. Arizona is a pioneer
Current silos of infrastructure must be integrated	Degree of collaboration is extensive
New funding streams must be developed	Project can not be executed with current funding
No governance model	Stakeholders must negotiate and develop one
16 different telephony LEC to coordinate	Other states have had difficulty with this issue
Weak telecommunication infrastructure in rural Az..	Must upgrade infrastructure

Project Critical Success Factors and Best Practices

Strong Executive Leadership
The current culture for Health and Human Services delivery is through a combination of government and private sector silos of information and distributed points of service. To build the "binding" layer of 2-1-1 service delivery will require strong executive sponsorship to remove barriers and demand accountability of stakeholders responsible for development and operation of the system components. Anything short of strong leadership will result in increased project risk, weaker deliverables at a greater cost.

Governance Model
The combination of the requirements for integration of silos, deployment of electronic government and electronic business initiatives, process re-engineering of both government and private sector business processes and the increased complexity of new requirements of Homeland Security on top of old Health and Humans Services delivery requires that a new Governance model to be established. A clear definition of boundaries and stakeholder roles and responsibilities is essential to success.

Collaboration of Stakeholders
There are so many interested participants in the development of this system, each owning an essential part of the overall requirements and needed results that a high degree of communication and negotiation is required to keep competing demands for resources in synchronization and in harmony. Lack of collaboration will lead to many cases of components that will not work correctly or a gap between performance and expectations.

Adequate Project Funding
The vision for Arizona 2-1-1 is broad. The conceptual scope is large and is a combination of requirements that make it clear that objectives can not be achieved without new funding sources. Stakeholders and decision makers must consider the amount of funds to be gathered to be a limiting factor on what can actually be accomplished and in the time frame it will take to achieve results.

Commercial Off The Shelf Technology Products
The complexity of this project is high. Therefore it is high risk and high cost. To mitigate this set of conditions in using technology to satisfy requirements it is essential that the system architecture be built upon proven commercial off the shelf products where ever possible. This will help in managing risk, cost, and milestone delivery schedules and in minimizing the amount of pioneering that is required to achieve the vision. It will also help in controlling operating costs

Project Management
This is a major technology project. Formal professional project management tools, personnel and skills should be used to manage the project.

Manage Capabilities and Expectations
Formal documents should be used to communicate the actual system that will be developed and when it will be built. Compromise will be required for a variety of funding, technical, political and business reasons. All stakeholders should understand what is to be built and the role they play in delivery and operation. Lack of communication about actual deliverables and schedules leads to frustration, lack of participation and disappointment of stakeholders and citizens for this project.

Formal Project Plan
The detail scope and requirements of the Arizona 2-1-1 project is still nebulous at the present time. A formal project plan and scope document should be developed, published and agreed to by all stakeholders at the beginning of the project.

Execute Project in Phases
The complexity and size of the proposed system is of such a nature that tackling the project in phases is most appropriate. Executive leadership should build this into the project business plan.

Integrate Infrastructure
Infrastructure used to support this project must be integrated to control costs, reduce risk and ensure deliverables really will work.

Conclusions and Suggestions

Analysis conducted for this report has led to the following set of conclusions being drawn.

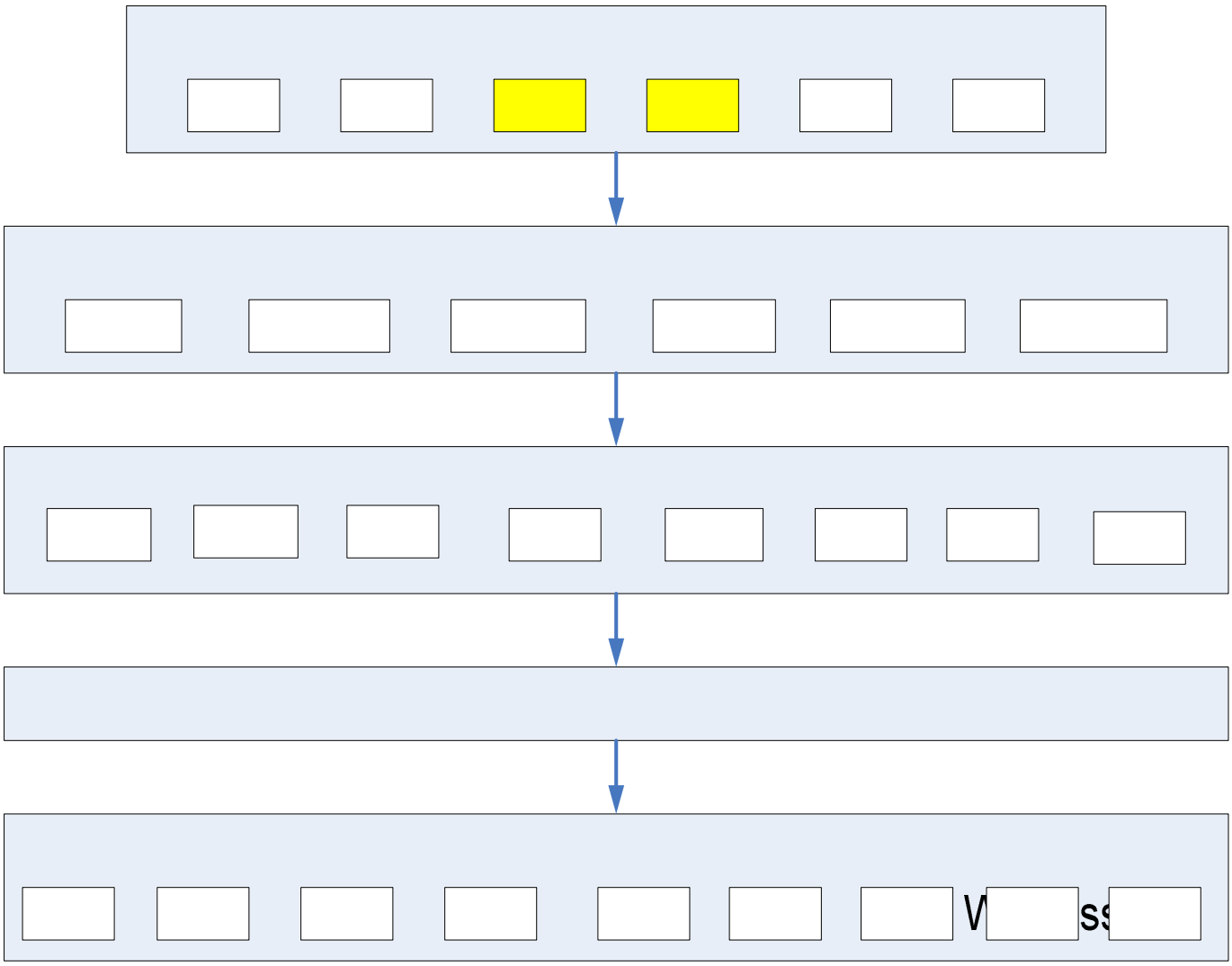
Conclusions

1. Existing government technology infrastructure can be used as an option for a foundation in building the future 2-1-1 System for Arizona. Private sector infrastructure is also viable for system components. A hybid architecture model for infrastructure is desirable.
2. Government, Private Non-Profit and Profit Organizations are all in the HHS business today with thousands of service providers located through out the State.
3. Health and Human Service Delivery today is through several different channels of loosely coupled silos of technology found in both the public and private sector
4. Existing government and private sector HHS organizations are continuing to develop their systems and delivery channels
5. New Health and Human Services Requirements are evolving as the result of terrorist acts and threats and the creation of new Homeland Security Infrastructure and Systems
6. 2-1-1 Systems are complex, take a great deal of collaboration along with time, money and dedicated resources to develop, deploy and maintain the systems. Those states with deployed systems experience an increase in usage by citizens and find their systems of value
7. Old and existing funding streams and resource pools are not adequate to support the major 2-1-1 initiative in Arizona. New funding streams must be developed
8. Quality Technology Solutions to support 2-1-1 requirements are readily available in the marketplace today. However, the technologies are continuing to evolve with greater capabilities to deliver improved integrated personalized services for citizens being developed each year. Careful planning is required to select components that integrate well and are interoperable as well as scalable.
9. The 2-1-1 Service Delivery System(s) must possess the attributes of being seamless, fast, efficient, reliable, accurate, secure and easy to use
10. 2-1-1 Systems Projects are expensive to develop and deploy and are high risk. Costs must be managed and a formal program should be used to identify and mitigate risks associated with deploying the final system design.

Suggestions

1. Follow ALLof the Project Critical Success Factors to control cost and mitigate risks. Failure to do so may lead to a failure.
2. Utilize a Hybrid Infrastructure Model. This minimizes both development and operating costs. The balance between government and private infrastructure components would be determined by the stakeholders identified in the Governance Model and the management team hired to execute the project phases.
3. Develop a formal 2-1-1 Business Plan to serve as a baseline document for stakeholders with clearly defined roles and responsibilities.
4. Assign resources to work with the Corporation Commission and the Local Exchange Carriers to make certain there are no issues and problems with assigning responsibility for a 2-1-1 number and in deploying the telephony system statewide. Additional work is needed to assure that the 2-1-1 system deployment statewide is achievable by the Local Exchange Carriers.

EXHIBITS



The above model depicts the major layers of the 2-1-1 system and the relationship of the components within each layer. The Arizona 2-1-1 Initiative places emphasis on the telephony and Internet service delivery channels. The 2-1-1 Performance Measurement and Citizen Feedback layer is new and must be defined and built. All of the upper layers of the model depends on the foundation infrastructure components to deliver information that is secure, reliable, fast, accurate, timely and ease to use.

Exhibit 1

2-1-1 TECHNOLOGY INFRASTRUCTURE ALTERNATIVE ASSESSMENT REPORT

Arizona State Government 2-1-1 Related Technology Infrastructure Matrix

Technology Domain	DOA	AHCCCS	DEMA	DES	DHS	DOR	DOT	GITA	DPS	CDHH	Other
Computing Services											
Windows Servers	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Unix Platform	Yes	Yes		No	Yes	No	Yes	IBM	Yes	No	Yes
Main Frame Data Center	Fee for Service	Use DOA	No	Yes	No	Use DOA	Use DOA	No	Yes	No	No
Telecommunications											
Statewide network	Yes - ATS	Yes	Yes	Yes	Yes	Partial	Yes	TOPAZ	Yes		DE
Call Center Services	Yes for fee										
Operational Call Ctrs.	Yes	Yes	disaster	Yes	Yes	Yes	planned		Spec.	Yes	
Local Area Network(s)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Telephony Services	Yes		emergncy	Yes		New VOIP	Yes			Spec	Leg
Statewide Contracts	Yes		Yes	Yes			Yes	Yes	Yes	Yes	
Web Services											
Internet Service Provider	Global		3rd Party	ATT / Qwest					3rd Party		
Web Portal - statewide	Web Site	Web sites	Web site	Web sit	Web sites	Web site	Web sites	State Portal	Yes	Yes	Yes
Pubic – Private Partnerships	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HHS Web Sites	Internal	Yes	limited	Yes	Yes	speclzd	5-1-1	Yes	Yes	7-1-1	
Health / Human Srv. Application Portfoilio											
N-1-1 Services	9-1-1			2-1-1			5-1-1	2-1-1	9-1-1	7-1-1	
HHS Mission Critical Applications	Host Infrastructur	Yes	HHS Links	Yes Human Services	Yes Bio-terrorsm	Yes	Yes GIS				
HIPAA	State ldr	Yes		Yes	Yes			Partner			
Collaborative Technology Projects	IBM		Yes			Acentur		IBM		MCI	Yes
Statewide Data Bases	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Overste	Yes		Yes
Security - Emergency											
SIPC	Co-Host	Yes	Yes	Yes	Yes	Yes	Yes	Overste	Yes	Yes	Yes
Homeland Security	Partner		Stat-Ldr	Yes	Bio-ter			Partner	Yes		
Disaster Backup and Recovery	Yes	Yes	Yes	Yes	Yes	Yes	Yes	State DR	Yes	Not known	Yes
IT Architecture - Standards	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Stat-Ldr	Yes	Yes	Yes
Link other stakeholdrs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

This chart summarizes the individual agency charts found on pages 15 through 24 of the report.

Exhibit 2

2-1-1 TECHNOLOGY INFRASTRUCTURE ALTERNATIVE ASSESSMENT REPORT

Arizona State Government 2-1-1 Infrastructure Alternatives

Technology Domain	DEMA	DES	ADOA	DPS	GITA	CIR Phoenix.	I&RS – Tucson	New 501C3 Or VSUW
Computing Services								
Windows Servers	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Unix Platform		No	Yes	IBM AIX	IBM AIX	Yes	No	TBD
Main Frame Data Center	No	Yes	Fee for Service	Yes	No	No	No	AS400
Telecommunications								
Statewide network	Yes – limited	Yes	Yes – ATS	Yes	TOPAZ	Local	No	Build
Call Center Services	No		Yes – fee		No	Yes 24X7	Yes 24X7	Build – Buy
Operational Call Center	Yes	Yes 24X7	Yes 24X7	24X7	No	Yes	Yes	Build – Buy
Local Area Network(s)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Build
Telephony Services	Yes	Yes	Yes	PBX	No	PBX	Limited	New or PBX
Statewide Contracts	Yes	Yes	Yes	Yes	Yes			Create
Web Services								
Internet Service Provider	3rd Party	Contracts – ATT / Qwest	Contracts – Global Crossing	TBD	IBM	Own - ISP	3rd Party	Acquire Or Build on Qwest
Web Portal - statewide	Web site	Web sites	Web site	Yes	State Portal	Web site	Web site	Build
Pubic – Private Partnerships	Various partners	Gov't to Gov't contracted service providers	Gov't to Gov't and Private Contracts	Yes Gov't to Govt Contrcts	Yes – IBM	Yes - Private consultant / contractor	Yes - Private consultants / contractors	Create New entity
HHS Web Sites	limited	Yes	State employees	Public Safety	Yes	Yes	Yes	Yes VSUW
Health / Human Srv. Application Portfolio								
N-1-1 Services	Linkage		9-1-1 Adm.	9-1-1	2-1-1 Partner			
HHS Mission Critical Applications	HHS Emrgnc Svcs.	Yes Human Services	Host Infrastrctr	Emrgnc Respnse	No	Service Provider Database	Service Provider Database	Build or Buy
HIPAA	No	Yes	State leader	Miniml	Partner	No	No	As Req'd Build – Buy
Collaborative Technology Projects	Yes	Yes	IBM	Gov't to Gov't	IBM	Tucson I&RS	Phoenix CIRS	Create
Statewide Data Bases	Yes	Yes	Yes	Yes	Over sight	Regional	Regional	Build or Buy
Security - Emergency								
SIPC	Emrgnc Plans	Particpnt	State – Coord.	Key Particpt	Ovrsigt	No	No	No
Homeland Security	State Ldr.		Partner	Yes	Partner	No	No	Negotiate
Disaseter Backup and Recovery	Yes	Yes	Yes	Yes	State DR	Yes	Contract	New or Build on VSUW
IT Architecture - Stds	Yes	Yes	Yes	Yes	State leader	AIRS	AIRS	Use AIRS
Link other stakeholders	Yes	Yes	Yes	Yes	Yes	Yes	Yes	New

This chart is a summary of the detail charts found in the body of the report

Exhibit 3

Planned or Active Technology Projects that impact 2-1-1 System Infrastructure

Project Name	Owner	Prjt. Stat	Cmpr Pltfm	Net Wk	Call Ctr.	Telc Sys.	N11 Svcs.	Web Svcs.	DB Sys.	DW Sys	Scrt Sys.	App Prtf
Arizona Self Help	ACAA	Active			Yes			Yes				Yes
7-1-1 Contract Upgrades	ACDHH	Planned					Yes					
ATS Outsourcing	ADOA	Active		Yes	Yes	Yes						
Operation Enclave	ADOA	Planned	Yes	Yes					Yes		Yes	Yes
9-1-1 Wireless Deployment	ADOA	Active					Yes					
HIPAA	ADOA	Active	Yes	Yes				Yes	Yes	Yes	Yes	Yes
Disaster Recovery – Data Center Backup	ADOA DES DPS	Planned	Yes	Yes					Yes	Yes	Yes	
5-1-1 System Upgrades	ADOT	Planned			Yes		Yes					
Kids Care Web Service	AHCCCS	Active						Yes				
Call Center - Telephony	AHCCCS	Active			Yes	Yes					Yes	Yes
Homeland Security Projects	DEMA/ OHS	Planned	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Emergency Management	DEMA/ OHS	Planned	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HHS 211 requirement document	State 211 Team	Active	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes
CPS Evolution	DES	Active	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes
Web-based bio-terrorism info	DHS	Active			Yes			Yes	Yes			Yes
BRITS	DOR	Active	Yes	Yes	Yes			Yes	Yes		Yes	Yes
AIRS Standards	GITA	Planned			Yes			Yes	Yes		Yes	Yes
Technology Architecture	GITA	Active	Yes	Yes				Yes	Yes	Yes	Yes	Yes
State Web Portal Upgrades	GITA	Active		Yes				Yes				Yes
TOPAZ	GITA	Active		Yes	Yes	Yes						
Telephone System Upgrade	I&RS - Tuc.	Active			Yes	Yes						
HMIS Pilot Project	CIR/IRS	Active	Yes	Yes	Yes				Yes			Yes
Milagro DB Project	CIR/IRS	Active	Yes	Yes	Yes			Yes	Yes		Yes	Yes
All Alert Nation Pilot Project	TBD	Active			Yes			Yes				Yes

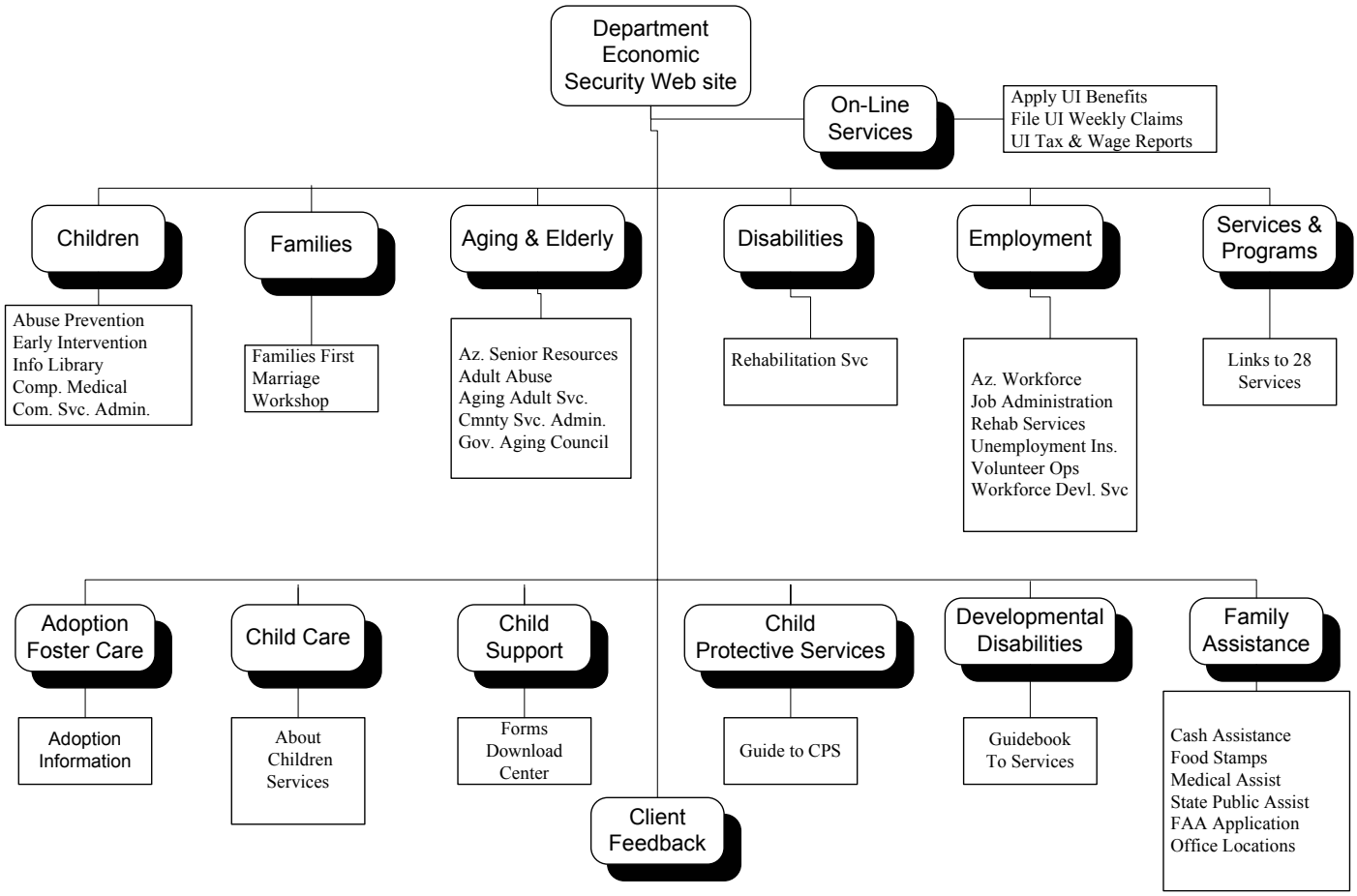
This is not a complete list of all technology projects. However, the list does illustrate the dynamics of the current environment and the degree of collaboration and coordination that is required to build the Arizona 2-1-1 system with components that fit together with minimum expenditure of resources to build.

Exhibit 4

States with Operational 2-1-1 Centers

State	Populatio	2-1-1 Design Model	Numbe Call Centers	24X7 Operati Hours	Go-Live Date	Statewid Services	System Operators	Local Exchange Carriers	
Alabama	4,447,100	Decentralized	6	Yes	12/01	No	Volunteer UW Montgomery UW	Bell South	
Colorado	4,301,261	Decentralized	7	Various	12/01	No	Colorado 211	Qwest	
Connecticut	3,405,565	Centralized	1	Yes	01/99	Yes	UW of Ct.	SNET (SBC)	
Florida	15,982,374	Decentralized	8	Yes	05/01	No	Various non-profi	Bell South Sprint Verizon	
Georgia	8,186,453	Decentralized	7	Yes	01/97	No	Multiple UW	Bell South Alltel	
Hawaii	1,211,535	Centralized	1	Yes	07/02	Yes	Aloha UW	Verizon	
Idaho	1,293,953	Centralized	1	No	09/02	Yes	Public – Pvt. Ptnrs	Qwest, GTE	
Kentucky	4,041,769	Decentralized	3	Yes	02/03	No	Diversified Owner	Bell South	
Louisiana	4,468,976	Decentralized	3	No	07/02	No	Louisiana UW	Bell South	
Michigan	9,938.444	Decentralized	3	Unknow	08/02	No	United Ways 211 Non Profit	Verizon Ameritech	
Minnesota	4,919,479	Hybrid	1 / 9	Yes	05/02	Yes	Twin City UW First Call Mn.	Qwest	
Nebraska	1,711,263	Decentralized	1	No	2002	NO	UW Midlands	Qwest	
New Jersey	8,414,350	Decentralized	3	Unknow	10/02	No	NJ 211 Partners	Verizon	
New Mexico	1,819,046	Decentralized	1	Unknow	10/01	No	UW Central NM	Qwest	
North Caroli	8,049,313	Decentralized	4	Yes	04/01	No	UW of NC	Bell South Sprint	
Ohio	11,353,140	Decentralized	2	Yes	11/02	No	OCIRP Diversified	Various LEC	
South Caroli	4,012,012	Decentralized	3	Unknow	06/02	No	Various UW	Bell South	
South Dakot	754,844	Centralized	1	No	10/01	No	Help Line Ctr.	Qwest	
Tennessee	5,689,283	Decentralized	3	Yes	07/02	No	ETIC Inc UW Tn. Tn. AIRS	Bell South	
Texas	20,851,820	Decentralized	13	Yes	Various	No	Tx. IR Network	SBC Verizon	
Utah	2,233,169	Decentralized	4	Yes	12/01	NO	211 Utah Various UW	Qwest	
Wisconsin	5,363,675	Decentralized	4	Yes	06/02	No	Independent Operators	Verizon Ameritech	
Washington		Hybrid	TBD		TBD	No		Qwest	

Washington is not an operational state at this time, but was included because of some unique things they are doing for development of a statewide network to support 2-1-1. They are also working collaboratively with the State of Oregon for the same infrastructure to serve northern Oregon along the Columbia River.



The purpose of this chart is to illustrate the extent that Department of Economic Security is in the Health and Human Services Business with a strong web presence for communicating with the pubic.

Exhibit 6

Health and Human Services Application Portfolio

The application portfolio found in the Departments of Economic Security, Health and the Arizona Health Care Cost Containment System are extensive. A summary of the applications are found in the following table.

Agency	Total Number of Application	FTE Support Staff	Platform Mainframe	Platform Mid Range	Platform PC Network	Off the shelf product	Total Number Of Program
Economic Security	60	181	48	1	11	Mixed	12,053
Health Services	46	85	5	7	34	Mixed	2,562
AHCCCS	34	64	19	2	13	Mixed	6,297
Totals	140	330	72	10	58		20,912

The source of this information is taken from GITA records generated from their annual IT Strategic Planning Process with all the agencies. The tracking system used to monitor all agencies applications during the Y2K systems upgrades is also used. GITA or individual agency documents can be reviewed if it is necessary to examine the detail in support of the decision making process.

The purpose of the information is to illustrate the depth and breadth of the existing government databases and application portfolio that is impacted by the development of the projected 2-1-1 system. It is very important to adopt an approach that meets the project goals and objectives without making extensive changes to the old application portfolio. This may require the acquisition of Enterprise Application Integration software (Middleware).

Exhibit 7